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LETTER OF TRANSMITTAL.

MICHIGAN,
DEPARTMENT OF STATE, }
Lansing, May, 1895.

HON. JOHN T. RICH, *Governor of Michigan:*

SIR—I hereby transmit, in accordance with law, the Twenty-seventh Annual Registration Report of Michigan, containing the statistics of the births, marriages and deaths that occurred in this State during the year 1893.

Very respectfully,

WASHINGTON GARDNER,

Secretary of State.

INTRODUCTORY REMARKS.

The present report, while delayed several months by the press of legislative work at the State printing office, makes its appearance at an earlier date than any registration report that has been issued since the report for the year 1869,—for which year the volume of the returns was only half as great as at present. It is not, therefore, the fault of the State Department, which is charged with the preparation of the registration report from the transcripts of births, marriages and deaths sent in by the county clerks, that the present report is dated nearly one and one-half years after the close of the year for which the registration was made; nor is it the fault of the county clerks, who, as a rule have made their returns with unusual promptness; nor of the supervisors, who, in turn, have reported to the county clerks at the usual time, as required by the registration law, the results of their enumeration of births and deaths taken at the time of taking the annual assessment. The onus for the delay, which so largely detracts from the interest and practical value of these reports, rests solely upon the present inadequate registration law, which was passed in 1867 at a time when the essential features of a prompt and accurate registration system were less thoroughly understood than at present.

Were the lack of promptness the only particular in which the present law fails, the reasons for its improvement would be less imperative. It is estimated that the returns of births and deaths would require to be increased about sixty per cent to fully represent the number that occurred; in other words, only about three births and deaths are properly returned out of every five that actually occur. As a result no proper legal records are preserved in many cases, and the statistical data are grossly unreliable for many important purposes, *e. g.*, the comparison of mortality from all causes and from certain important diseases with meteorological data, by months and seasons. On page 231 reference is made to the valuable work in Sanitary Meteorology recently inaugurated by the United States

Weather Bureau, for which the coöperation of the several State and city registration offices was desired. The results of registration in Michigan for over twenty-five years are nearly, if not quite, worthless for exact comparisons with meteorological data, since the returns vary greatly in the degree of perfection in different months of the year. More of the deaths that occur in January, fifteen months from the time of the annual enumeration, are forgotten or neglected, than of those that occur in December, only four months prior thereto.

It is not necessary to explain at length the various points of imperfection in the statistics collected under the present law, nor the essential features that a new law should possess in order to bring the registration of vital statistics in this State more nearly to the level of modern requirements. These subjects were fully discussed in the Introductory Remarks of the reports for the preceding two years, to which reference may readily be made. The sum and substance of the whole matter is that the only reliable method of collecting vital statistics is by their *immediate registration*,—not by an enumeration made sometime after their occurrence, as at present,—and that the principal objects of their practical employment by sanitary authorities can be attained only by their prompt report to the central registration office, whence monthly or weekly bulletins may be issued for the information of the public at a time when the facts are of interest. The date of issue of the annual report is a matter of less importance, provided that prompt information be disseminated through the monthly bulletins, but such reports could be carefully compiled and published within a few months after the close of the registration year without difficulty. The advantages of what may be called a contemporaneous study of the vital conditions of the year by the compiler, instead of the retrospective view afforded at present, may be mentioned as likely to greatly enhance the interest and practical utility of the work.

PROPOSED LEGISLATION RELATING TO VITAL STATISTICS.

From the Legislature of 1895 something was reasonably to be expected in the way of a reform of the present imperfect and wasteful registration law. Memorials from the State Medical Society, the State Board of Health, the Michigan Academy of Science, the Detroit Academy of Medicine, and the recommendations of this Department, as contained in the Letters of Transmittal of the Secretary of State to the Governor for some years, had called attention sufficiently, it was believed, to the necessity of a change in the present system, besides which a bill embracing the essential features of the modern registration of births and deaths was drafted

and respectfully submitted for consideration. The text of this bill, which was introduced in the Senate by Hon. O. A. Janes of the Sixth District, and in the House by Hon. J. T. Campbell of Ingham county, is herewith presented, together with such amendments as were incorporated therein. The bill failed to become a law.

A BILL to provide for the immediate registration and prompt return and compilation of births and deaths in Michigan.

[Senate bill No. 61, file No. 23, introduced by Senator Janes, January 18, 1895. House bill No. 131, file No. 60, introduced by Mr. J. T. Campbell, February 1, 1895.]

SECTION 1. *The People of the State of Michigan enact*, That each city, incorporated village, and township shall constitute a registration district for the registry of births and deaths. The clerk of each city, incorporated village, and township shall be the registrar of births and deaths for his registration district. He shall receive certificates of births from physicians, midwives, parents, householders, or other persons required by law to make such report, and shall number and record each certificate, in the order in which it was received, in a register of births. He shall also receive applications for burial or removal permits from undertakers or other persons required by law to furnish the same, said applications containing the personal and statistical facts required by law concerning every deceased person, together with the certificate of cause of death, and shall record the same in a register of deaths. He shall transmit the original certificates of births and deaths to the Secretary of State as provided for by Section 5 of this bill. *Provided*, That the clerk of any city or incorporated village may, upon request of the supervisor of a contiguous township, act as registrar of said township. In such case he shall be known as the registrar of the joint registration district, and shall receive such payment for the record and return of each birth and death received from the township as would otherwise be paid to the township registrar. Separate registers and separate returns shall be made for all cities and villages included with townships in joint registration districts. *Provided further*, That in cities that have an efficient system of immediate registration of deaths in operation, at the time of taking effect of this act, conducted by the city board of health, the health officer, secretary, or other officer now conducting such work shall perform the duties of registrar under this act instead of the city clerk, and shall in all respects conform to its provisions.

SEC. 2. Every physician or midwife attending upon the birth of a child shall make a certified return of the facts required relative thereto, within three days thereafter, to the registrar of births and deaths of the registration district in which said birth occurs. Such returns shall contain the following items: Date of birth, stating day, month and year; name of child (when christian name has not been given at time of making the report, it shall be supplied by a supplementary statement made when that name is ascertained); sex; number of birth to mother, as first born, second born, etc.; whether still-born, twin, triplet, etc.; whether legitimate or illegitimate; birthplace, giving ward, street and number if in a city; full name of each parent; birthplace of each parent; age of each parent; color of each parent; occupation of each parent. If any birth occurs without the attendance of a physician or midwife, then it shall be the duty of the parent or parents of the child or of the householder upon whose premises the birth occurs to report the same to the registrar within three days thereafter.

SEC. 3. The body of no person whose death occurs in the State shall be interred, deposited in a vault or tomb, or otherwise disposed of, or removed without the State or the registration district in which the death occurred, until a permit for said burial or removal shall have been properly issued by the registrar of births and deaths of the registration district in which the death occurred. A permit for the burial or the removal of the body of any deceased person shall be issued by the registrar only after the filing of a proper application therefor, with a statement of the personal and statistical facts required certified to by a competent person, and with a certificate of the cause of death included therein and certified to by the physician in attendance during the last illness of the deceased person, by the health officer or coroner. And such permit for burial or removal shall be granted by the registrar in cases of death from infectious or contagious diseases only in accordance with the regulations of the local board of health and of the State Board of Health relating thereto.

SEC. 4. The application for a burial or removal permit with the certificate of cause of death, shall be made upon a blank form furnished by the Secretary of State. It shall contain:

(1.) Application for burial or removal permit: Date of death, stating month, day and year; full name; sex; age in years, months and days, if known, or the approximate age if the exact age cannot be ascertained; color; conjugal condition; place of death, giving ward, street and number if in a city; birthplace; occupation; full names of both parents; residence of parents; nativity of parents; proposed place and time of burial; signature and address of persons applying for permit.

(2.) Certificate of cause of death: Immediate cause of death, together with contributory causes or complications, if any; duration of each cause; date last seen by medical attendant or fact of no medical attendance; in violent deaths, statement whether death resulted from accident, suicide or homicide; whether a post mortem examination was held and results thereof; signature and address of medical attendant, health officer or coroner certifying to facts.

The application for a burial or removal permit, together with the statement of facts required therein, shall be signed by a relative, friend, householder, manager of the institution upon whose premises the death occurred, or by any competent person acquainted with the facts. The certificate of death shall be signed by the physician last in attendance upon the deceased person (or by the health officer or coroner in case of deaths without medical attendance, or of sudden or violent deaths). It shall be the duty of the undertaker or other person in charge of the burial or removal of the body of any deceased person whose death occurs in any registration district of the State to obtain the application for burial or removal permit, with the certificate of death, file the same with the registrar of births and deaths in whose district the death occurred, and obtain the proper burial or removal permit based thereon from the registrar prior to the burial or removal from the registration district of the corpse. And it shall be the express duty of the registrar to see that the law governing the issue of burial and removal permits is strictly complied with, that all personal and statistical information required on the blank applications is fully supplied, so far as it is possible to obtain the same with reasonable effort, and that a clear and distinct statement of cause of death, so far as known, is made by the certifying physician. In case of doubt in regard to the return of cause of death, or if a vague, ambiguous or incorrect statement is made under that head, the registrar shall immediately refer the application to the health officer or coroner, prior to the granting of a permit, who shall investigate and report the facts

over his official signature: *Provided*, That in case of investigation of an unsatisfactory return, the registrar may issue, in his discretion, when it shall appear that death resulted from natural causes and not from unlawful means, a temporary permit allowing burial or removal, which temporary permit shall be canceled by a regular permit issued in due form upon the completion of the proper return.

SEC. 5. Books of record shall be furnished to the registrar of each registration district by the Secretary of State to be known as the register of births and the register of deaths. The register of births shall provide for recording the following facts pertaining to each certificate of birth received: Record number; date of birth, specifying month, day and year; names of parents; given name of child; sex; color; whether still-born, twin, illegitimate; residence of parents. The register of deaths shall provide for recording the following facts pertaining to each certificate of death received: Record number; date of death, specifying month, day and year; full name; sex; color of each parent; names of parents if a child; cause of death; place of death; place of burial.

The registrar shall number immediately upon their receipt by him each certificate of birth and each certificate of death, using a separate consecutive series of record numbers for each, which shall begin with No. 1 for the first birth and for the first death recorded by him in each year. These record numbers shall constitute a part of the official record of each birth and death in the district registers, and the births and deaths shall be recorded in the order of their record numbers. After the records have been made in the registers, as provided above, the registrar shall promptly transmit, in official envelopes supplied by the State, all the original certificates of births and deaths to the Secretary of State, to be compiled and permanently preserved by him. Such return shall be made by every registrar in the State on the fourth day of each month (on the fifth day if the fourth day shall be Sunday or a legal holiday), and shall contain a statement by the registrar that the package contains all certificates of births and deaths filed for the preceding calendar month, that no certificate has been withheld or unlawfully added, and that no alteration, except such as provided for by Section 4 in the case of imperfect returns, has been made therein; and further shall specify any omissions or inaccuracies that may have come to the knowledge of the registrar as affecting the correctness of the returns. Registrars of cities, and registrars of country districts in case of the prevalence of communicable diseases dangerous to the public health in their districts to an unusual degree, shall make returns to the Secretary of State at more frequent regular intervals than one month, if required by him so to do.

SEC. 6. Still-births shall be recorded and returned both as births and deaths, and a permit for burial or removal shall be required for the body of a still-born child as in the case of a death from any other cause. The application for the burial permit of a still-born child, of a still-born child prematurely born, and of a child of which the cause of death is stated to be premature birth, shall state the month of uterogestation at which the child was born and the cause which led to its death, if known.

SEC. 7. The records of births and deaths shall be preserved by the registrar, and shall be open to inspection by all persons for proper purposes, by all city, village, township or county officials, by the Secretary of State and the Secretary of the State Board of Health or their accredited representatives, provided that such examination shall be made in such a way that the contents of the registers shall not be subjected to risk of damage or alteration or the prompt registry of the births and deaths received by the registrar be interrupted. The registrar shall promptly inquire into the facts when any omissions or discrepancies in the personal or statistical facts recorded are called to his

attention by the Secretary of State, shall truly ascertain such missing facts of record, and make a certified statement thereof to the Secretary of State, and enter the correction, in red ink, over his official signature, upon his record. The contents of the register shall be *prima facie* evidence in all courts and for all purposes of the facts relative to any birth or death therein recorded, and shall be verified, in case of dispute, by a certified copy of the original certificate of birth or death from the Secretary of State.

SEC. 8. Registrars of births and deaths shall receive twenty cents for the proper record and return of each birth and death. The Secretary of State shall certify to each registrar annually, or oftener if it shall be considered expedient by him, the number of properly executed certificates of births and deaths received from him for the year or portion of the year included, which certified statements shall be received by the treasurer of the county in which the registration district is situated, and payment made by him in accordance with the rate fixed by this section: *Provided*, That the Secretary of State shall not include imperfect certificates of births and deaths nor those not transmitted promptly as required by Section 5 in the number certified for payment: *Provided further*, That the clerks of cities having a population of —* inhabitants or over shall receive no compensation other than their regular salaries for the duties required by this act.

SEC. 9. The Secretary of State shall furnish registers of births and deaths to each registrar, and separate registers to the registrar of each joint registration district for each village, city or township included. He shall supply registrars with burial permits, with transit or removal permits, with envelopes for transmission of returns, and with such blanks and stationery as may be necessary for the thorough execution of the law. He shall furnish blank certificates of births and of deaths to physicians, midwives, undertakers, or other persons required to make such returns, either directly or through the district registrars as may be deemed expedient. He shall receive the certificates returned under this act, permanently bind and preserve them, make indexes thereto, and issue certified statements, on application, of the facts relating to any birth or death. For each such certified statement he shall receive a fee of twenty-five cents, together with payment for time of search, if over one-half hour, at the rate of fifty cents per hour, which fee shall be turned over to the treasury of the State. On or before the fifteenth day of each month he shall issue a bulletin of mortality for the State, giving the number of births and deaths registered in each registration district of the State during the preceding calendar month, together with statements of the deaths in each district from dangerous communicable diseases, of children under five years of age, and such other statistical details as may be judged of interest to the public and valuable for the restriction and prevention of disease. He shall also prepare and cause to be published on the first day of March in each year, or as soon thereafter as may be, a report to the Governor of the State on the vital statistics of the preceding calendar year, which shall include such tabular statements, diagrams, maps, comparisons (with the statistics of this State in previous years and with those of other states, countries and cities), and deductions therefrom as shall render them of practical utility and serviceable to the public health administration of the State, and promote the scientific study of the vital conditions of the State. In the preparation of this report he shall be aided by such expert assistance as he may deem necessary, and as may be voluntarily rendered by the regularly authorized committees of the University of Michigan, of

* Any limit of population may be here inserted that shall be deemed expedient. In the original bill it was 5,000 inhabitants. See explanation on page xxii.

State medical societies, and of the State Board of Health. The bulletins and report shall be ordered printed and distributed in such manner as the Legislature may from time to time direct.

SEC. 10. Any physician, midwife, parent or householder who fails to report a birth to the registrar of the district within which it occurred, as provided by Section 2, shall be liable to a fine of not less than five nor more than twenty-five dollars, or to imprisonment not to exceed thirty days, or to both fine and imprisonment. Any undertaker, sexton, express agent, railroad official or employé, relative, friend, clergyman, physician, or other person controlling, directing or in charge of the interment, entombment, removal, or other disposition of the body of a deceased person, or of a still-born infant, without a proper burial or removal permit issued by the registrar of the district in which the death occurred, shall be liable to a fine of not less than ten nor more than one hundred dollars, or imprisonment not to exceed thirty days, or to both fine and imprisonment. Any physician who shall refuse or fail to make a proper and correct certificate of the cause of death of any person upon whom he or she was the last medical attendant, to the best of his or her knowledge or belief, shall be liable to a fine of not less than five nor more than twenty-five dollars, or to imprisonment not to exceed thirty days, or to both fine and imprisonment. Any registrar who shall, without justifiable cause, neglect or refuse to perform any of the duties enjoined on him by this act, within the time limited by this act, or who shall communicate to any person not authorized to receive the same any of the personal or statistical facts recorded on his registers, shall be guilty of a misdemeanor, and on conviction thereof shall forfeit a sum not exceeding one hundred dollars, or be imprisoned in the county jail not exceeding thirty day, or suffer both such fine and imprisonment in the discretion of the court; or if he shall willfully and knowingly make or return false certificates or fictitious returns, or cause the same to be done, he shall be deemed guilty of a misdemeanor, and upon conviction thereof shall forfeit a sum not exceeding three hundred dollars and be imprisoned not more than one year, or shall suffer both fine and imprisonment in the discretion of the court.

SEC. 11. All other acts and parts of acts which are inconsistent with this act are hereby repealed: *Provided*, That the present registration law as contained in act No. 194 of 1867, as amended by act No. 125 of 1869, shall be continued in force until the statistics of births and deaths for the calendar year 1895 shall have been collected, returned and compiled thereunder.

PETITIONS IN FAVOR OF THE PASSAGE OF AN IMPROVED REGISTRATION LAW.

The following extracts are taken from the Legislative Journal of various dates, and show that much interest has been awakened in the subject of the improvement of our State system of registration. The memorial of the State Medical Society, in particular, is an excellent *résumé* of the reasons why such action is at present necessary:

STATE BOARD OF HEALTH.

To the Honorable the President and Members of the Senate:

At the regular meeting of the State Board of Health held at Lansing, January 11, 1895, the following preambles and resolutions were unanimously adopted.

WHEREAS, An accurate and prompt registration of the deaths and the causes of deaths in each locality of this State would be of very great practical usefulness to the work of this board, and consequently of great value to the people of Michigan; and

WHEREAS, Under the present law, which has not been amended since 1869, the registration of vital statistics has failed to give accurate results, and to present them sufficiently early to be of the greatest practical sanitary use and public interest; therefore

Resolved, That the Michigan State Board of Health earnestly recommends the enactment of an improved law for the registration and return of deaths (and also of births), which law shall provide for their immediate record, and prompt report to the State Department.

Resolved, That a committee be appointed by this Board to present the subject to the Legislature, and to urge such action; said committee to act independently or in conjunction with similar committees of the Michigan State Medical Society, Michigan Academy of Science, or other organizations, as may be deemed advisable.

The subject was referred to the committee on statistics of mortality and sickness, with request to act in accordance with the resolutions. Accordingly, this statement has been prepared by the committee, and is hereby respectfully presented to the honorable Legislature of the State of Michigan.

Very respectfully,

[L. S.]

HENRY B. BAKER,
Secretary of the State Board of Health.

MICHIGAN ACADEMY OF SCIENCE.

Memorial of the Michigan Academy of Science to the Legislature asking that an efficient law for the registration of births and deaths in Michigan be enacted.

WHEREAS, The Michigan Academy of Science recognizes that the results obtained from an efficient system of vital statistics are of the highest scientific interest, as well as of great practical importance to the people of the State in affording indispensable information as to sanitary and social conditions; and

WHEREAS, The present system of registration of births and deaths, which was enacted in 1867 and last amended in 1869, has long been known to be defective in furnishing reliable results and in furnishing any data in time to be of public interest and immediate sanitary value; therefore be it

Resolved, That the Michigan Academy of Science respectfully urges that a modern system of registration for births and deaths be established in this State, which shall provide for the complete report of all births and deaths that occur in the State, prompt returns to the central registration office, and timely publication of results, thereby adding to their reliability, popular interest and sanitary value.

The foregoing resolution was prepared by the Council under the direction of the Academy at its meeting at Lansing, December 26 and 27, 1894.

FREDERICK C. NEWCOMBE,
Secretary pro tem. of the Council of the Michigan Academy of Science.
Ann Arbor, Mich., Jan. 16, 1895.

MICHIGAN STATE MEDICAL SOCIETY.

Memorial from the State Medical Society praying for the enactment of an improved law for the registration of births and deaths.

To the Honorable the Legislature of Michigan:

At the twenty-ninth annual meeting of the Michigan State Medical Society, held at Lansing, May 3 and 4, 1894, it was unanimously voted that a committee of five members

should be appointed to memorialize the Legislature for the passage of an improved law for the registration of births and deaths in this State. The undersigned were appointed such committee and accordingly beg to lay before your honorable body certain statements bearing on the necessity for the enactment of such a law, the benefits that it will afford to the people of the State, and certain well known requisites of modern vital registration to which it should conform.

It should be said at the outset that medical men, as such, have no peculiar personal interests to be subserved by the passage of such a bill, other than those advantages which will accrue to all classes of the community. Indeed, the bill that the committee has examined (Senate bill No. 61, House bill No. 131), and which it indorses as likely to furnish an accurate and useful system of registration for the State, imposes certain additional burdens upon the medical profession, without recompense therefor. One object proposed to be gained by the bill—prompt and reliable information concerning the sanitary condition of the State—will, in the opinion of this committee, be accepted by enlightened professional opinion as a reward for the labor of supplying accurate statistical details concerning causes of death.

The present registration law of Michigan, which was enacted in 1867 and last amended in 1869, was intended to, but does not, accomplish the results that the proposed bill will obtain. These objects may be summarized briefly as follows: (1) An accurate record of every birth and of every death for legal purposes; (2) Knowledge of the distribution in each part of the State of mortality from all causes and from diseases of importance, such as consumption, diphtheria, typhoid fever, etc., thus enabling the sanitary conditions of different localities to be accurately compared, as well as that of the State as a whole with other states and foreign countries; (3) Accurate and timely information for the people in regard to changes in the sanitary and social condition of the State.

The old registration law fails to fulfill these requirements. Its chief defects are the following: (1) Owing to the fact that births and deaths are not registered as they occur, but are enumerated by the supervisors or assessors in April and May of the year following the registration year, many are entirely omitted and the facts concerning many of those enumerated are not accurately given, thus invalidating their legal value. It has been ascertained, by inquiry at the office of the Secretary of State, that requests for certified statements of births and deaths that undoubtedly actually occurred in the State, have been frequently received at the State Department, concerning which no information could be furnished on account of the imperfection of the returns. It is estimated by the Secretary of State that only about three births and deaths are correctly returned to his Department for every five that actually occur in the State. The injustice that may result from such neglect to children, whose certificates of birth are required for the establishment of claims to inheritances, widows obliged to furnish evidence of death for the establishment of pension claims, and the like, is apparent.

(2) The present returns of deaths do not supply accurate knowledge of the causes of death. The supervisors who make the enumeration have no medical knowledge, nor have the county clerks who receive the original returns and transcribe them for the State Department. As a rule no information is obtained under the present law from the physicians last in attendance upon deceased persons, from whom alone reliable information can be had. On account of the large number of omissions in the returns, no death-rates for the State as a whole, or for any portion of it, can be obtained that are at all reliable for comparison with those of other states or countries having accurate

systems of registration. Nor, from the great variation in accuracy under the present loose system in different counties and in different years, can the relative degrees of mortality in different parts of the State be correctly estimated.

(3) Such reports on vital statistics as we have necessarily appear so late under the present law that much of their interest and value is lost. As an example, the births and deaths for the past year, 1894, are not even enumerated at present (February, 1895), and will not be until April and May next. They are not required by law to be returned to the Secretary of State until September 1 next, and their compilation, being received in one mass for the entire year, is then an arduous task. The facts contained in these returns for 1894 will not be available until 1896, or nearly two years, on an average, after their occurrence.

The requisites for an improved registration law are few, and the establishing of such an improved system is no experiment. Such laws have been in operation in the New England states, New York and New Jersey sufficiently long to show their practical efficiency, and there is no reason whatever why Michigan should not now establish an excellent system, which will go immediately into practical operation, and thus give her a position of advantage and priority in the general movement for the establishment of improved public health systems in the western states. It cannot be too strongly insisted upon that the fundamental basis of public health work and sanitary efficiency is a reliable record of mortality. Facts are better than guesses, and reliable death-rates more satisfactory than suppositions as to the relative health of communities.

The principal points to be observed are (1) that all births and deaths be registered immediately, *i. e.*, as soon after their occurrence as practicable and while all details can be ascertained; (2) that the statement of cause of death in death certificates shall be made by a physician; (3) that all returns shall be promptly made to the central office, and the results of registration be promptly given to the public, in time to be of sanitary value and public interest. All of these essential features are included in the bill "To provide for the immediate registration and prompt return of births and deaths in Michigan," which this committee therefore fully indorses, and prays that it, or some equivalent measure, may receive your sanction.

Respectfully submitted,

LEARTUS CONNOR, Detroit,
WILLIAM J. HERDMAN, Ann Arbor,
EUGENE BOISE, Grand Rapids,
GEORGE E. RANNEY, Lansing,
HENRY B. BAKER, Lansing,

Committee of the Michigan State Medical Society.

DETROIT ACADEMY OF MEDICINE.

Memorial from the Detroit Academy of Medicine to the Legislature of Michigan, praying for the enactment of an improved law for the registration of births and deaths.

WHEREAS, The Detroit Academy of Medicine recognizes an efficient system of vital statistics as essential to the best interests of the people, in that it alone can give reliable information concerning certain sanitary and social conditions;

WHEREAS, The present system of registration of births and deaths was enacted more than a quarter of a century ago, and has long been known as defective in many particulars and unable to furnish reliable results of value to sanitary science or promotive of the interests of the people; therefore be it

Resolved, That the Detroit Academy of Medicine respectfully urges that a modern system of registration for births and deaths be established in this State, which shall provide for the complete report of all births and deaths that occur in the State, for prompt returns of the same to the central registration office and timely publication of results.

Resolved, That the Detroit Academy of Medicine respectfully urges the Legislature of Michigan to consider the bill introduced into the Senate by Senator Janes and known as No. 61 (file No. 23), providing for the immediate registration and prompt return and compilation of births and deaths in Michigan, and either enact it in its present form or with such modification as shall be deemed wise in order to better accomplish its purpose.

ARTHUR H. BIGG, M. D., *President*.
W. B. SPRAGUE, M. D., *Secretary*.

GENERAL DISCUSSION OF THE PROPOSED REGISTRATION LAW.

It was not the purpose of this bill to originate a new and expensive kind of machinery for the purpose of obtaining an efficient registration, but rather to employ the present form of registration wherever possible, simplifying the same and adapting it to the advances in our knowledge of the requirements of accurate vital statistics. The item of expense was an important one. While it would seem that an accurate and reliable system of registration would be cheap at twice or thrice the cost of the present defective returns, nevertheless the bill was drawn so that the charge of increased expense, to any appreciable amount, could not be justly made against it. Indeed, as will appear, the average cost of collection under the proposed law would be reduced from sixteen cents to about twelve cents for each birth and death recorded, and the aggregate yearly cost of registration, allowing for the registration of many births and deaths each year that are at present neglected, would be but a few hundred dollars in excess of the present annual expenditure. This economy it was proposed to attain by utilizing the local systems of registration at present in operation in many of our cities.

The following remarks take up the sections of the bill *seriatim*, reference being made to the text printed on pages vii-xi.

Section 1 provides for the appointment of a local registration officer, who shall collect the data at first hand, and, as provided by Sections 2 and 3, *immediately* after the occurrence of the births and deaths registered and while the facts are fresh in mind and may be accurately obtained. Good clerical ability is the chief requirement for this work, although in cities, where large numbers of death certificates are granted, some medical supervision is desirable. The proviso at the end of the section is designed to leave the present methods of collection of data by city boards of health

undisturbed, and subject to the personal direction of their health officers or secretaries as at present, but requires such uniformity as shall best serve to render the returns from all the cities of the State directly comparable and useful for statistical purposes. The proviso in regard to joint registration districts is merely for the convenience of townships whose inhabitants have been accustomed to use the cemeteries belonging to adjacent cities or villages, and meets a practical exigency. It would probably be preferable to make the formation of the joint district depend on the vote of the inhabitants of the township, and to require a formal notification of the same to be filed with the Secretary of State.

Section 2 contains in detail the items required to be registered concerning each birth. They are substantially the same as now required under the old law, with the addition of the "number of birth to mother," and "age of each parent." These items are now required by some states and furnish information of great social importance. The requirement of the return within three days gives ample time for ascertaining all the facts, while, if enforced, it will cause a sufficiently prompt registration. The limit is "within forty-eight hours" in Detroit at present, and "within twenty four hours" in Grand Rapids. To require a return by physicians or midwives at the end of the month, or even to permit ten days' delay, as has been suggested, will prove fatal to the promptness and consequent accuracy of the results to be obtained by the law.

It has been suggested that the return of a supplementary statement by physicians giving the christian name of the child in cases in which it could not be ascertained at the time of the original return, will cause additional (unpaid) labor on their part. This is not necessarily so, as the birth certificates can be readily arranged with a detachable slip to be left with the parents of the child at the time of birth, which will then be filled out and returned by them directly to the local registrar as soon as the christian name has been given. The christian name is, moreover, not an absolutely essential part of a statistically satisfactory birth record, there being many instances under the present law where it is never returned. It is believed, moreover, that parents would take pains to complete the records, recognizing the fact that the future interests of their children might be affected by them.

Section 3 is an important one. It provides primarily for the rigid requirement of a certificate of death in the case of every death that occurs in the State. Such requirement is the absolutely essential requisite of an accurate system of mortality statistics. It causes no hardships and infringes upon no personal rights; its extensive prevalence in the more advanced states and in nearly all of the cities of this State and country is sufficient evi-

dence upon that point. Moreover, it has been found in practice to be a useful auxiliary to the public health service, giving early notice of the prevalence of infectious diseases and forming a convenient means of restricting the attendance on the funerals of persons dead with communicable diseases, and also serves as a safeguard (to a limited extent) against the commission of crime.

This section makes an important distinction in the classes of facts that appear upon the certificate of death. Those of a personal character only, such as name, age, etc., are to be certified to by a relative, friend or any reliable person acquainted therewith. The statement of the cause of death, with the facts immediately appertaining thereto, is to be certified to by a physician only, either by the physician last in attendance upon the decedent, or, in case of death without medical attendance, by the health officer or coroner. The importance of this clause as bearing upon the correct return of the causes of death is very great. At present such returns are made by supervisors having no medical knowledge, as a class, and the number of incomplete, incorrect, absurd and entirely unspecified returns is very large every year. Such returns as "chronic," "complicated," "yaller ganders," "rash," "sore inside," etc., etc., are sufficiently frequent to indicate that a method of registration that shall derive all statements of cause of death from physicians is greatly needed.

Section 4 prescribes in detail the contents of the application for burial permit and certificate of death, which is the most important part of the proposed improvement in the law. The facts of a personal character required are the same as those returned under the present law, with the addition of the statement of nativity of parents (of special interest in the study of deaths of children) and the place of burial. The certificate of cause of death is arranged for a complete return both of the immediate cause and of the contributory cause or causes, together with their duration, and is adapted to furnish data of the greatest medical and statistical interest. As showing the form that returns will often take under this provision, the explanatory note printed upon the official certificates of death in use in the state of New York may be quoted: "Instructions.—Under cause or causes of death, insert remote, immediate or concurring causes. For instance, insert 'measles and pneumonia,' or 'difficult labor, peritonitis and septicæmia,' or 'scarlet fever, nephritis, dropsy and coma,' in cases presenting these phenomena." The provision for a full explanation of the cause of death, as understood by the medical attendant, obviates the unscientific jumping at conclusions often necessary when the statement is limited to a single term. This form of return was advocated, and introduced in the

city and state of New York, long ago by the eminent Dr. Elisha Harris, and its success in practical operation demands that it be made a part of every modern system of registration of deaths. The registration law of Massachusetts also requires such a form of statement in the certificates of death of soldiers and sailors, thus showing the obvious bearing of the facts proposed to be ascertained upon pension and insurance interests.

It may be said in passing that such full and correct returns of causes of death, couched necessarily more or less in medical nomenclature, are possible only when the original certificates filled out by the medical attendants are returned and compiled directly by the central office, as provided in Section 5. Experience of the present law shows that medical terms copied by clerks ignorant of their use, are so garbled as to be rendered quite unintelligible in many cases.

It is made the duty of the undertaker, or other person in charge of the burial, to attend to the duty of obtaining the necessary burial permit, which is only issued after the filing of a certificate of death. Undertakers would be supplied with blanks for this purpose, to be filled out and signed by the relatives or friends (for personal details), and by the physician (for cause of death), and it is made the express duty of the local registrar to see that the law governing the filing of such certificates is strictly complied with. While a certain amount of rigor is absolutely necessary in the working of a successful registration law, it is known from long experience that the above requirements will work no hardship, unless in very exceptional cases, and the security thrown around life by the formalities requisite to burial will be regarded as an adequate recompense by the people for any slight inconveniences incidental to their enforcement. At present, except for local provisions in certain cities, the body of a human being may be interred or otherwise disposed of in this State with as little formality as that of a brute.

Section 5 relates to the preservation of a local record, and the making of regular monthly returns to the central office. The keeping of local registers of births and deaths is not an essential part of the operation of a successful State registration law. They are not required under the New York law, but may be employed or not as the local authorities decide. It is important chiefly that the certificates themselves be filed strictly in accordance with the law, and that the original certificates be transmitted regularly at the close of each monthly or weekly period to the central office for compilation and permanent preservation. It is believed, however, that the keeping of a local registry containing the chief items of personal interest for identification purposes, would add to the efficiency of the law in practice, while entailing but little additional expense. Cities

that now possess local records should be permitted to maintain them with as great fullness of statistical and personal details as may be desired.

The initial expense of establishing such local registers in every registration district in the State would not be excessive, being probably less than \$1,500.00, while the annual expense thereafter would be not over fifty per cent of that at present, since only one copy of each entry would be required instead of two or more as under the present law. The expense of local registers, moreover, is balanced by the cost of the county registers and indexes required at present, which, for the 83 counties in the State, four books for each and these of an expensive character, probably exceeds \$1,700.00.*

This section requires prompt monthly returns of the original certificates of births and deaths. Such returns will enable statistical information to be furnished at a time when it is most valuable and of the greatest interest to the public. It will enable a bulletin of mortality to be issued about the middle of each month, showing the distribution of mortality and the prevalence of important diseases over the State, and will allow the

* ESTIMATE OF COST OF PROVIDING EACH REGISTRATION DISTRICT OF THE STATE WITH REGISTERS OF BIRTHS AND DEATHS GOOD FOR FIVE YEARS.

Population of Michigan in 1894.....	2,241,454
Number of townships.....	1,210
Number of incorporated villages.....	293
Number of cities.....	70
Total number of districts.....	1,573
Average population of registration districts.....	1,425

Assuming a death-rate of 20 per 1,000 and a birth-rate of 40 per 1,000 there would be about 30 deaths and 60 births registered each year in each district. In five years there would be 150 deaths and 300 births to be provided for. A book of $\frac{1}{2}$ quire contains 24 pages, each easily capable of holding 20 entries. Such a book will, therefore, accommodate 480 entries, or as many births as will be registered in 8 years or deaths in 16 years, the estimate being based upon present population. The large margin of time is ample allowance for any possible increase of population in the next five years.

COST OF DISTRICT REGISTERS.

Under the present contracts, as ascertained by inquiry of the clerk of the Board of State Auditors, each book of $\frac{1}{2}$ quire will cost as follows:

For paper	\$0 08
For printing and ruling	0 06
For binding (price charged under present contract for binding book of 1 quire)	0 18
Total cost of register.....	\$0 32
Cost of two registers provided for each district	\$0 64
Cost of providing State (1,573 districts), with registers	1,006 72

Allowing 50 per cent additional for expense of binding large registers for cities, the maximum cost for supplying registers is \$1,510.08.

Under the present law, each county is supplied with a record of births, a record of deaths, and with separate indexes for each. The cost exceeds \$20.00 per set on the average, making the total initial cost for the State over \$1,780.00. Of course, these books last a number of years, depending on the size of the county.

annual report to be issued shortly after the close of the registration year, as provided in Section 9, instead of being nearly two years in arrears as at present.

Section 6 refers to the collection of a very important class of deaths, whose proper registration, even in some countries having otherwise excellent registration laws, is sadly neglected. Thus in England only children born alive are registered, and in many continental countries there is much confusion of terms from the fact that children born alive but dying before registration, are classed as still-born. To be abreast of modern requirements, a registration law should distinctly define the term, limiting its meaning to those infants whose deaths occurred prior to birth, and should require a record to be made of the month of uterogestation in all deaths of infants that did not reach full term. Every case should be recorded both as a birth and as a death, and it should be the duty of the local registrar to exercise special vigilance in this class of cases in order that the criminal destruction of infant life may be prevented as far as possible. Concerning the operation of a similar law in New York City, the late Dr. Elisha Harris remarked: "Scarcely any of the still-born infants that had reached a viable period of uterogestation escape registration in this bureau, and, indeed, no blighted birth that, in its foetal state, passed the period of 'quickening,' escapes the proper registration. This registration is not for the common inspection of the public, but is essentially a social and hygienic safeguard required in the interests of good order and a suitable regard for family honor and respect for the sacred attributes of human life." In a paper read before the Section on Public Medicine of the British Medical Association, August 2, 1893, Dr. R. R. Rentoul, of Liverpool, forcibly pleads for the legal recognition of the sacredness of human life in its most helpless, most defenceless period: "The time is surely ripe for a public protest against the gross indifference of women of all classes, as shown to the infant in the womb. The present state of affairs is a public scandal. A class of political economists may say that the human animal is a "glut" in the market, and so, not having the money value of a pig, calf or sheep, it may be placed on that little list from which, they hope, it may never be missed. On the the other hand, our words and actions must be made to give a strong color to public thought—to instil the knowledge that from the moment of conception there is life; that this life has a right to claim our protection; and that it is one of our first duties to bring about registration and inspection of still-born children."

Among the ignorant and those uninformed as the important uses of the facts sought to be gathered by such a law, opposition will be invariably

aroused by specific regulations for the registration of still-births. The assumed "indelicaey" of the subject may offend certain fastidious ones, and to others it may appear that the State is attempting to make inquiry into personal matters into which it has no right to intrude. In reply it may be said that in no class of deaths is it the duty of the State to exercise greater watchfulness lest wrong be done to the innocent; that the facts collected are not for general examination, the registrars being prohibited under heavy penalties from revealing any information in their possession to unauthorized persons (Section 10); and, lastly, that still-births have been collected and reported in Michigan, to the number of upwards of a thousand annually for years past, without any of the objections apprehended being encountered. Should, however, the objections referred to be regarded as insuperable, it should be remembered that the entire omission of the offending section would not impair the general efficiency of the proposed registration law, under which probably as large a number of still-births would be returned as at present.

Section 7 relates to the precautions under which the registers of births and deaths shall be subject to public examination, to the manner of correcting imperfect returns, and to the status of the registers as legal evidence of the facts therein contained. In addition to the correction of incorrect returns through the local registrars, as provided for by this section, it is expected that the return of the original certificates of death will permit direct correspondence with the physicians issuing them, and thus admit of many important corrections in the statements of the causes of death. Such a system of direct correspondence between physicians and the central registration office has worked very satisfactorily in Minnesota, many important changes being annually made in the returns.

Section 8 states the compensation to be given to district registrars for each birth and death correctly and promptly registered. At present very many imperfect returns are made by the supervisors, and in the absence of any provision in the law for their review, are accepted and paid for at the same rate as perfect returns. The section explicitly provides that the Secretary of State shall not include imperfect or delayed certificates in the number certified to each local registrar for payment. The amount paid for each item (20 cents) is slightly greater than at present paid (16 cents), and is not divided between two officials, the supervisor and the county clerk as at present, but goes solely to the officer collecting the original returns. The compensation given the county clerks under the old law was intended to cover the cost of making the two copies of the returns required, but as it is proposed to have the original certificates returned directly to

the central registration office under the proposed act, such unnecessary expense can be done away with. The transmission of the returns of births and deaths through the offices of the county clerks serves no good purpose, causes many errors and practically prevents their being properly corrected, and causes much delay. A direct connection between the officers collecting the original data and the compiling office is indispensable to good results; this principle has been thoroughly demonstrated by past experience with the county system in this State, and has also been shown in other states that have used both methods.

Some explanation may be necessary in regard to the clause providing that the special compensation of 20 cents each shall not be paid to clerks of cities of over 5,000 population, who shall act as registrars. There is no discrimination against cities intended by such limitation, it being evidently quite immaterial whether their clerks shall be compensated for such duties, as for all others, by a fixed salary, or by fees, which are to be paid out of the county treasury from money originally assessed on the cities. The object in suggesting such a provision was simply to make the total expense of the proposed method of collection approximately the same as at present by utilizing the systems of immediate registration now in operation in many of the cities of the State. No additional duties are imposed upon the city clerks in many cases, and no special compensation in addition to their present salaries is therefore required. Should its operation in any instance entail much additional work, the case can be met as well by increasing the salary of the office as by direct compensation by means of fees. This principle was recognized in the general charter bill* for cities of the second class (population 50,000 to 150,000), which provided that:

"It shall be the duty of the clerk of the board of health to annually on the first day of June make a report to the county clerk of the county in which such city is located, giving a detailed statement of the births and deaths in the city during the preceding year ending December 31, together with such other vital statistical information for such year as may be in the possession of the board of health. Such service shall be performed by the clerk of such board without compensation."—*Chap. XV, Sec. 12.*

It is estimated that under the provisions of this section, the total cost of collection of the returns of births and deaths, plus about 28,000 cases that are omitted each year under the present law, would be only about \$300.00 in excess of the present amount expended. The average expense of collection of each birth and death would be reduced from sixteen cents to twelve cents. In fact the reduction would be greater, for the statement of sixteen cents for each item collected under the present law does not include the cost of collecting the same returns a second or a third time, as frequently

* Prepared by the Commission appointed by the Governor pursuant to an act of 1893 to report a general municipal incorporation bill.

happens, under the local municipal registration and by the State and United States censuses, all of which would be dispensed with if we had an efficient State registration law.*

Section 9 provides for the distribution of blanks, preservation of the returns, and issue of the monthly bulletin of mortality and the annual report on vital statistics. The clause relative to the editorial assistance that may be furnished by committees of the University, State Medical Societies and State Board of Health, is similar to that contained in the present law. It is many years since the editorial work on the State Registration Report was performed by a committee of the Michigan State Medical Society, and, so far as known, no committee was ever appointed by the Medical Faculty of the University for this purpose.† The original law fully recognized the professional character of the work, and for this reason, as well as from the probability that the University will in future show greater interest in statistical work of this character than in

*COMPARATIVE COST OF COLLECTION OF BIRTHS AND DEATHS UNDER THE PRESENT AND PROPOSED SYSTEMS.

For the year 1893 there were returned in Michigan:

Births.....	47,722
Deaths.....	21,982
Total.....	69,704

Cost of collection, under present law, at 16 cents each..... \$11,152 64

Out of the 69,704 births and deaths returned for 1893, 19,598 births and 9,079 deaths were returned from cities of over 5,000 population. This leaves 41,027 births and deaths returned from the country (exclusive of cities of 5,000 population); this number, paid for at 20 cents each, would cost as follows:

Cost of collection, under proposed law.....	\$8,205 40
Saving over present system for same number of births and deaths returned.....	2,947 24

This statement assumes that all births and deaths that occur in cities of 5,000 inhabitants and upwards will be returned by the clerks (or health officers) of said cities without special compensation in addition to their regular salaries. It should be noted that practically all of the duties required of city clerks by this bill are already performed by them under local ordinances.

One of the principal reasons for demanding a change in the law is the fact that under the present system many births and deaths that occur are not registered. Should the returns be increased, therefore, by 40 per cent of their present number, we shall have, assuming that the increase is divided in the same proportion as at present between cities of 5,000 population and country exclusive of such cities,— Fifty-seven thousand four hundred and thirty-eight births and deaths paid for at 20 cents each \$11,487 60
Increased cost of reliable registration, about 28,000 births and deaths being registered each year that are now omitted..... 334 96

Average cost per birth or death registered at present.....	16
Average cost per birth or death under proposed law.....	12

† Since the above was in type, it has been ascertained that the Medical Faculty of the University probably appointed one of its members, in 1870, to act as a committee on the preparation of the report. The gentleman named, the eminent Dr. A. B. Palmer, later Dean of the Department of Medicine and Surgery, learned that Dr. Henry B. Baker, appointed by the State Medical Society for the same purpose, had already begun his labors, and did not actively engage in the editorial work. It may be noted here that the text of the proposed law does not confine such coöperation to the Medical Department solely, as did the old act. Vital statistics now occupies a broader place in enlightened public esteem, and, undoubtedly, some of the most useful assistance to be derived from connection with the University would come from the Departments of Political and Social Science.

the past, it seemed wise to retain the nominal connection in order that whatever voluntary assistance may be offered shall be utilized without embarrassment.

It may not be improper at this point to say a word as to the important place recently given in many of our leading universities to statistical science and technique. Statistics is growing in recognition as an indispensable method in sociology, for whose thorough understanding practical methods are as indispensable as laboratory work in chemistry. As Honorable Carroll D. Wright, United States Commissioner of Labor, forcibly urged in a paper on "The Study of Statistics in Colleges," at the joint session of the American Economic and Historical Associations in 1887, "The men who are the best trained, who have learned the practical work of special sciences are the ones that are guiding the people, and so the colleges or the universities which grasp these things, introducing the teaching of statistical science along with all the other great features of social science, including the branches which bring knowledge nearest to the community itself, are the colleges which will secure success; and not only success in a pecuniary point of view, but success in that grander field of the best work for the race." No form of statistics is of more general interest nor serves more fully to display the general principles of statistical work than vital statistics, and while this subject should not be employed in an educational course to the exclusion of other important topics, it seems admirably adapted to form an introduction to the study of statistics. This is well seen in the excellent course in Statistics and Economics, given by Professor Richmond Mayo-Smith in Columbia College, of which purely vital statistics forms an important part. Again, for seminary researches by advanced students, there is a multitude of interesting subjects suggested by a course in vital statistics, and excellent opportunities for original work. As an example, the paper by Professor Walter F. Willcox, on "The Marriage-rates in Michigan for Twenty-one Years, 1870-90," which appears on pages 83 to 90 of this Report (through the courtesy of the author and of Dr. Dewey, Secretary of the American Statistical Association, in whose *Publications* it originally appeared), may be taken as representing the character of the work performed by the classes in the Department of Political Science at Cornell University under Professor Willcox's direction. The material for this paper was derived from these Reports, and it is scarcely necessary to say that data of equal interest and capable of furnishing as valuable conclusions, if employed with discrimination, are abundant in the registration reports of this and other states. It is not claimed that such data are always fully reliable as presented, for an important part of

practical statistics is the criticism of data, and for this an abundant opportunity is furnished by our diverse systems of registration, but it is believed that after the elimination of the dross a substantial basis of important facts will remain well worthy of attention. A closer connection between the University of Michigan and the authorities charged with the preparation of the State Registration Report would result in good to both, on the one hand by affording the material for statistical treatment, at home and where it is accessible and capable of being fully understood, and on the other by turning the attention of a corps of trained observers to the analysis of facts heretofore less thoroughly studied than they deserve, and by increasing the popular interest and appreciation of this class of work.

Section 10 prescribes the penalties to be attached to violation of the law on the part of those persons charged with making returns, and also to the improper use of the personal information contained in the registers by the officials having them in charge. The exact monetary limitations of the fines to be imposed and the extent of imprisonment liable to be incurred for given violations of the law, are beside the purpose of a preliminary draft of the law. They should be settled by legislative experience in accordance with the general trend of punishment for similar offenses. There are at present in Michigan local registration ordinances having penal clauses attaching severer penalties to their violation than any contained in this bill. On the other hand, it should be remembered that the bill proposes to exact some of the most essential information from the medical practitioners of the State without making a direct recompense therefor, as the memorial of the State Medical Society clearly states, whence it would be most ungracious to attach as stringent penalties for neglect as would be permissible in the case of paid servants who failed to perform their duty. Finally, while one of the important purposes of the proposed registration act is to act as a deterrent to crime, certain species of which are decidedly hindered by a rigid requirement of certificates of births and deaths in every instance, the registration law itself cannot be construed to punish those offenses that may be concealed by its violation. For criminal abortion, as a case in point, other and graver penalties are applicable, while the acts of failing to register the birth of the child, either living or still-born, of reporting a child born alive and subsequently murdered as "still-born," or of failing to report the death of the mother, if such occurred, or of reporting a false cause of death, are comparatively venial offenses. They do, however, furnish an excellent first line of defense against crime, and in the hands of a vigilant local registrar may often lead to its detection and prevention.

In concluding this somewhat extended review of the principles of the proposed improvement in our registration law, it is hardly necessary to speak in explanation of the interest of the State Department in the passage of such a measure. Charged with the execution of the present imperfect law, and conversant with the very unsatisfactory character of its results, it is clearly the duty of the Department to use its best efforts in order that the law may be amended, and the money that is annually expended in the name of vital statistics (now partly wasted so far as adequate results to the people of the State are concerned) may be made to yield more obvious and practical results.

This can be done, it is believed, with little or no increased expense over the present unsatisfactory method, by means of the proposed bill. There are other plans, no doubt, that would furnish equally good results. Those that have worked well in Maine or Massachusetts, New York or New Jersey, may be adopted in its stead, if, on careful examination, they be deemed preferable. It is time that some change was made in our present antiquated system of vital statistics, and if the draft of the proposed bill serves no other purpose than merely to call the attention of the Legislature and the people of the State to this fact, it will have answered well its object. Surely the people of this great commonwealth are sufficiently intelligent to appreciate the importance of this subject, which forms the very basis of all sanitary progress and is an indispensable condition of enlightened social legislation. To argue otherwise would be to assert that Michigan has retrograded in the last quarter of a century, instead of having advanced, and that the noble objects that she proposed to attain when the old registration law was enacted in 1867 have depreciated in her estimation. This is not true, and it is believed that when her present apathy shall have been shaken off, she will regain, by the enactment and enforcement of an effective modern system of registration, that proud position that she once occupied in the van of the western states in this respect, and one not incomparable with those held by her in educational, social and sanitary progress.

CHANGE IN THE METHOD OF DISTRIBUTING THE REGISTRATION REPORTS.

By a special inquiry made by this Department preparatory to the distribution of the last Annual Report (1892), it was found that a very large number of the copies of the reports on vital statistics annually sent to the county clerks for distribution was uncalled for, and had either accumulated year after year in their offices, embarrassing them for needed room, or had been employed for base uses, such as kindling, mailing-

wrappers for newspapers, scrap-books, or the like. For this reason a radical change of methods was adopted in the distribution of the last report, as many as possible being sent directly to the newspapers, officials and persons entitled to them by law, and only as many as could be properly distributed, to the county clerks.

The waste in distribution mentioned above was not confined solely to the Vital Statistics Reports, but was common, and in some cases in even greater degree, to many other State publications. This was ascertained by the replies to circulars sent out by this Department for the use of the special committee on State publications. As a result of such investigation, it would seem that the need of an improvement in the law relating to the publication and distribution of the various State reports is clearly indicated. Until such change in the law, however, a more satisfactory and economical distribution of these reports may be obtained under that proviso of the present law (§ 26*n*, Howell's Statutes, Supplement; end of section) which permits the Secretary of State to, "in his discretion, personally deliver or ship directly to any of the persons, officers, corporations or societies entitled to any book or books mentioned in this act." Fewer books are required to be printed by this plan, and assurance is had that they reach the persons entitled to them by law, instead of remaining in the county clerks' offices as useless lumber. The number of copies of the present report was voluntarily reduced by this Department from 3,800, the number printed for some years preceding, to 2,000, and there is no reason to doubt that this number, their distribution being made directly by the Secretary of State, will amply meet all legitimate demands at present. *Supervisors, county officials, and others who have been accustomed to obtain the Registration Reports from their county clerks, will please take notice, accordingly, of the change in the method of distribution, and should the county clerk be unable to supply the demand, make direct application to the Secretary of State for the same.*

AGE OF CONSENT AND PARENTAL CONSENT.

Two laws were enacted by the Legislature of 1895 bearing upon the marriage relation. One of these, public act No. 70, by raising the age of consent from fourteen to sixteen years, the latter being the minimum age at which females are permitted to marry in Michigan, removes an anomaly that previously existed in our laws, under which the consent of a female child over 14 years of age and under 16 could be pleaded as a defense in a prosecution for unlawful relations, while female children between those ages were not considered capable by the law of contracting legal marriages.

The second law is that requiring written consent of one of the parents or of the guardian to be filed with the county clerk in every application for a marriage license of a female who has not attained the age of 18 years. The text of this law, being public act No. 243 of 1895, is as follows:

AN ACT to amend section three of act No. 128 of the public acts of 1887, entitled "An act for the requiring of a civil license in order to marry, and the due registration of the same, and to provide a penalty for the violation of the provisions of the same," approved May 31, 1887, the same being section 6222c of Howell's annotated statutes.

SECTION 1. *The People of the State of Michigan enact*, That section 3 of act No. 128 of the public acts of 1887, entitled "An act for the requiring of a civil license in order to marry, and the due registration of the same, and to provide a penalty for the violation of the provisions of the same," approved May 31, 1887, being section 6222c of Howell's annotated statutes, be and the same is hereby amended so as to read as follows:

SEC. 3. It shall be the duty of the county clerk on application being made to him to fill out the blank spaces of the license according to the sworn answers of the applicant, taken before him or some person duly authorized by law to administer oaths. Whenever it shall appear from said affidavit that the said applicant applies for a license for the marriage of a female who has not attained the age of eighteen years, then it shall be the duty of said county clerk to require that there shall first be produced the written consent of one of the parents of said female or of her legal guardian to the marriage of said female, and to the issuing of the license for which application is made, unless such female have no parent or guardian living. No license shall be issued by said county clerk in such cases until the said requirement is complied with. Such written consent shall be preserved on file in the office of said county clerk. If it shall appear that the parties are legally entitled to be married, the county clerk shall sign the license in certification of the fact that it is properly issued, and he shall make a correct copy thereof in the books of registration. For his services connected therewith he shall be entitled to a fee of fifty cents, to be paid by the party applying, and at the time of the issuing of the license. He shall give the license thus filled out and signed by him, together with the blank form of certificate to the party applying for delivery to the clergyman or magistrate who is to officiate at the marriage. On the return of the license to the county clerk as hereinafter provided with the certificate of the clergyman or magistrate that the marriage has been performed, he shall record in the book of registration in their proper places of entry the date and place of the marriage, the names and residences of two witnesses to the marriage and the name of the officiating clergyman or magistrate. All licenses and certificates so issued and returned shall be preserved on file in the office of the county clerk, and he shall as often as once in three months make a faithful report to the Secretary of State of all licenses and certificates issued and received by him.

Approved June 1, 1895.

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ERRATA.

On p. 10, second line of note, read "Association" for "Society." On p. 31, line of synopsis relating to Table 17, read "1893" for "1892." On p. 44, in the heading of Table 16, read "parentage" instead of "percentage." On p. 54, fifth line above Table 18, read "4 pairs of twins" for "4 twins." On p. 63, the largest number of marriages occurred in November, as stated, but the figures given are those of the previous year; referring to Table 29, p. 66, substitute "2,060 or 10.7 per cent" for "2,181 or 10.8 per cent," and "February, 1,273" for "January, 1,335" (the percentage in the latter case was identical, 6.6 per cent). On pp. 70-71, in the headings of Tables 32 and 33, read "quinquennial" for "quiquennial," and "1893," "1890-92," for "1892" and "1890-93," respectively. On p. 81, Table 36, read "Ages of females under 16 years." On p. 84, last line of first paragraph, read "on page 86" for "on the next page." On p. 94, headings of Tables 39 and 40, read "1891-93" for "1891-92." On p. 139, second line of second paragraph of circular, read "unnecessary" for "necessary." Table 57, p. 162, should precede Table 58, p. 161. On Map, opposite p. 168, in last line descriptive of shading, read "No deaths reported from this disease" instead of "these diseases."

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TWENTY-SEVENTH ANNUAL
REGISTRATION REPORT OF MICHIGAN.

PART I.—VITAL STATISTICS AND POPULATION.

This part of the report aims to present the general results of the registration of births, marriages and deaths in Michigan during the year 1893, together with such comparisons of the same with the results of previous years and with the population supplying the returns as may serve to make the data presented fully intelligible.

It is evident, with very little consideration, that a knowledge of the amount and character of the population from which returns of births, marriages and deaths are derived is essential for their intelligent study. Thus the number of deaths returned in the State from year to year may be expected to increase with the increasing population. Whether the number returned for any particular year is excessive can only be judged by careful study of the *death-rate* of the year in comparison with those of preceding years of registration. The term *death-rate* is a compound one, and always implies two things, viz.: (1) the determination of the number of deaths that occurred; and (2) the determination of the population of the year in question. The ratio of deaths to population, conventionally expressed as deaths or death-rate per 1,000 population, is the measure employed in vital statistics for the comparison and discussion of mortality. By its aid the history of the State in regard to mortality is conveniently expressed, and it also serves as a standard of comparison by means of which the results of registration in different states or in foreign countries may be compared, and thus the values of various systems of sanitary administration be settled. It should not be forgotten that many precautions are necessary in practice to eliminate the influence of special conditions, such as the age and sex constitutions of different populations, but nevertheless the accurate determination of the total or gross death-rate is the primary object at which the system of State registration should aim.

Owing to imperfections in the method of obtaining the initial data relating to births and deaths, the vital statistics of Michigan have never given satisfactory statements of birth-rates or death-rates for the State. Full explanations of the nature and causes of the deficiency in these returns have been given in previous registration reports, so that it is merely necessary to call attention to the fact that such imperfection exists and to approximate its amount—which may be safely considered about 60 per cent of the actual number returned in each case. That is to say, the returns of births and the returns of deaths should be increased by about 60 per cent of their present amounts to represent the actual births and deaths that would be returned under an efficient system of registration. These strictures on the accuracy of the registration returns in Michigan do not apply to those of marriages, which are fully collected under the excellent license law passed in 1887. It should be also recognized that for many purposes of statistical interest, complete returns are not necessary, if only the returns received be sufficiently numerous and representative in character to fairly represent the whole number of events that occurred. In the discussion of the tables in this report it will be pointed out, as far as possible, whenever the statements made are unreliable from the imperfection of the returns, it being true as a rule that relative statements, not requiring the absolute numerical completeness of the quantities entering into the ratios, may be accepted as fairly reliable. All birth-rates and death-rates are far below the truth, and all comparisons of the numbers of births and deaths in different months or seasons are vitiated by the fact that the returns are more perfect for the latter months of the year than for the early months, owing to less lapse of time before enumeration.

Considerable attention has been paid in these reports beginning with 1891, to the estimation of populations for inter-census years. Such estimates are absolutely necessary as furnishing bases for the vital rates presented. It is true that the exact amounts of estimated populations may vary, accordingly as different methods of calculation or different censuses are employed. Such variations are generally slight, however, and affect the rates calculated upon them to only an insignificant amount. The possible error is certainly much less in most cases than the absolute error inevitable from reference of the vital data of any year to the last census, that census being several years antecedent.

The State census, taken in June, 1894, and used in conjunction with the United States census of 1890 in the calculation of populations for the intervening years, shows a marked falling off from the rate of average annual increase shown by previous United States censuses. While that rate was 45,266 persons per annum from 1870 to 1880, and 45,695 from 1880 to 1890, the rate from 1890 to 1894 was only 36,891, or a decrease of nearly 9,000 per year. It follows that the populations and rates given in the preceding reports and based on the assumption that the rate of average annual increase existing from 1880 to 1890 would continue for 1891 and 1892, require some corrections in the light of the recent census. The variation is very slight, however, amounting to only a few tenths per thousand at most, and may be seen by comparing the rates given for 1891 and 1892 in Table 4 with the rates in the corresponding table in the report for 1892.

The following are some of the general results of registration for 1893. For further particulars see the summaries at the beginning of each part of this report, and also the general list of tables and alphabetical index.

SUMMARY OF REGISTRATION RETURNS FOR THE YEAR 1893.

Total number of marriages,	19,197
Persons married,	38,394
Persons married per 1,000 estimated population,	17.4
Total number of births,	47,722
Births per 1,000 estimated population,	21.6
Total number of deaths,	21,982
Deaths per 1,000 estimated population,	10.0
Natural increase of population,	25,740
Natural increase per 1,000 estimated population,	11.6

From the beginning of registration, April 5, 1867, to the close of the year covered by this report, 1893, there have been registered the following total numbers of returns of each class:

Total number of marriages registered,	382,580
Total number of births registered,	994,432
Total number of deaths registered,	417,623
Aggregate number of births, marriages and deaths,	1,794,635

Compared with the previous year, we observe a decrease in the number of marriages returned, amounting to 910 couples. The marriage-rate (persons married) fell from 18.4 to 17.4 per 1,000 population. The number of births increased 1,501, and the number of deaths increased 253 over 1892.

The most notable feature of the year is the sharp decline in the marriage-rate, consequent on the hard times prevailing throughout the State. Great distress was experienced during the winter of 1893-94 in the iron-mining counties of the upper peninsula on account of the shutting down of the mines, and the number of marriages, usually very large, which is returned from that part of the State, fell off abruptly. A corresponding decrease or rather lack of increase in the number of children born of foreign-born parents took place, although the total number of births for the year showed an increase over 1892. While there were 1,248 more births of children of parents both native-born reported for 1893 than for 1892, there was an increase of only 20 in the number of children born to foreign-born couples. The effect of the hard times on the birth-rate of children born to foreign-born parents cannot be expected to be as immediately and abruptly apparent as the effect on the marriage-rate, but will rather be progressive for a series of years to come.

The increase in the number of deaths returned for the year is no more than is justified by the increase of population. The death-rate, 10.0 per 1,000 inhabitants, is the same as last year. No epidemics prevailed, although quite a large number of deaths was again reported from influenza ("la grippe"). The total number so returned, however (555), was much less than the deaths reported from this cause in either 1890, 1891 or 1892. It is probable that our method of collection of data in this State tends to a larger return of indefinite causes, such as "la grippe" has fairly become, than when the statements of cause of death are derived from physicians' certificates. Three deaths were returned from small-pox, a greater number than has been reported for some

years past. It is premonitory of the prevalence of this disease in this State during the following year, when sixty deaths occurred according to reports made to the State Board of Health.

As conveying authentic and well-considered information as to the nature and extent of the business depression in Michigan in 1893, the following statements from the report of Hon. Chas. H. Morse, State Labor Commissioner, are presented. Their relation to the vital statistics of the State will be found to be very intimate.

"While nearly all classes of population of the State have suffered directly or indirectly from the business depression which commenced quite early in the year, the laboring population—those who work for wages—have suffered most. No matter whether inquiries are made among skilled or unskilled laborers, thousands are out of employment. As the season advanced and factory after factory closed, cut down its force, or reduced wages, the market for labor grew worse. At the close of the year many thousands of laborers are out of employment and they and their families become dependent upon charity for their support.

"Factories and business places were inspected since September 1, and from these employment blanks it is found that of the 2,066 factories inspected, 377 were idle and 1,689 in operation the whole or a part of the time. Of those being operated 1,117 were running full time and 572 were running only a part of the time. In those running part time we find a loss to labor of 32,627 hours per week or more than 26 per cent as compared with the average hours when running full time. Looking at the other positive loss of labor, viz., men laid off on account of business depression, it is found that in the factories inspected, 48,752 operatives are out of employment, or 43.6 per cent of the whole number reported as employed when the plants mentioned are being operated at their full capacity. Besides all this, wages have been reduced on an average of 9.5 per cent since April 1, 1893. These figures are thought to be conservative and reliable, and show that during the time between September 1, 1893, and February 1, 1894, labor has lost in 2,066 factories 706,676 ten hour working days from short hours, on account of business depression, and 1,056,294 days by men being laid off for the same reason, making a grand total of 1,763,060 days' loss in five months; besides there is a loss of 9.5 per cent on wages by reduction. With all this loss the factory laborers of the State, are, for a wonder, self-supporting.

"The laboring class in the upper peninsula, particularly in those counties which contain the mining ranges where iron ore is produced, have been the greatest sufferers. When the mines closed down, business was nearly at a standstill. Something of the severity of the suffering may be seen by the statements from the county clerks of Gogebic, Iron, Dickinson and Marquette counties, showing the number cared for November 30, 1892; also showing the number cared for by the said counties the same date in 1893, but this by no means gives anywhere near the number out of employment and dependent on charity.

Counties.	In poor house.		Temporarily relieved.		Total.	
	1892.	1893.	1892.	1893.	1892.	1893.
Gogebic.....	4	10	150	4,500	154	4,510
Iron.....	11	15	15	50	26	65
Dickinson.....	No poor house	house	245	987	245	987
Marquette.....			1,342	3,482	1,370	3,519
Total.....	43	62	1,752	9,019	1,795	9,081

"In the copper-mining counties no such state of things exists as are found in the Iron Ranges. Copper is low in price, but the demand has been fairly good. So far as the Labor Bureau is informed, the mines are being operated with little reduction in force or wages. Indeed, it has been the boast of residents of Houghton county that they were experiencing comparatively little of the bad effects of the hard times of which so many complain."

The following list shows the arrangement and character of the tables presented in this part of the report:

Synopsis of tables showing the general results of registration of vital statistics in Michigan and their relation to population.

Table.	Vital statistics and population.
1.	Marriages, births, deaths and natural increase of population in Michigan in 1893.
2.	Growth of the State as shown by a comparison of the populations stated by the successive National and State censuses from 1810 to 1894.
3.	Estimated populations for inter-census years by the geometric method and by adding the average annual increase for each year (the latter adopted in this report), together with the logarithms of the populations arranged for use in computing rates.
4.	Relation of registration returns to population, giving the number of persons married, births, deaths and natural increase of population per 1,000 inhabitants for each year of the period 1868-93.
5.	Comparative table, showing the results of the National and State census enumerations of births and deaths in Michigan from 1870 to 1890.
6.	Births, deaths and natural increase of population by months for six years, 1888-93.
7.	Marriages, births and deaths in Michigan during the year 1893, arranged with reference to sex, color and nativity for comparison with the corresponding classes of the population according to the census of 1890.
8.	Number of marriages, births, deaths and natural increase of population for each county of the State in the year 1893, with rates per 1,000 estimated population.
9.	Comparison of the returns of marriages, births and deaths from each county in the State for the year 1893 with the corresponding returns for 1892, showing the increase or decrease in each county of each class of returns.
10.	Character and movement of population of Michigan by counties, showing the number and percentage of increase or decrease of population of each county from 1890 to 1894; nativity of inhabitants, and increase or decrease of population of each nativity in each county from 1890 to 1894.

Table 1.—*Number of marriages, births, deaths and excess of births over deaths in Michigan during the year 1893, with the average number for certain subdivisions of the year.*

Periods of time, 1893.	Marriages, 1893.	Births, 1893.	Deaths, 1893.	Excess of births over deaths, 1893.
Total for year	19,197	47,722	21,982	25,740
Average number per quarter	4,799	11,931	5,496	6,435
Average number per month	1,800	3,977	1,832	2,145
Average number per week	369	918	423	495
Average number per day	58	131	60	71

Table 1 gives a statement of the number of marriages, births, deaths and excess of births over deaths recorded for the year 1893. In order to make these numbers more easily comprehended, calculations are given of the average number of each returned for certain subdivisions of the year. Thus, 53 marriages occurred, on the average, on each day of the year 1893, in various parts of the State. There were 131 children born and 60 deaths in the same time. The net daily increase of the population of the State, aside from the number added by immigration, was 71 persons.

POPULATION AND VITAL RATES.

Tables 2 and 3 supply the basis upon which the rates given in Table 4 are calculated. In Table 2 the population of Michigan is given according to each United States and State census since 1810, and the amount and percentage of increase of inhabitants by each enumeration over the population of the preceding census are also given. The last State census, that of 1894, shows the smallest per cent of increase over the preceding census (either the United States census of 1890 or the State census of 1884), of any census in the history of the State, the imperfect war-time census of 1864 not excepted. Of course, in this comparison percentages of increase for either four or ten year periods are compared with those for the same length of time.

While a constant diminution has been shown to exist in the decennial rates of increase of population of the State, and, in fact, it was estimated in the last report that if such change continued at the same rate as in the past thirty years, the decennial per cent of increase would be about 20 per cent from 1890 to 1900, it was not expected that the rate would immediately become so low. This has, however, proved to be the case, as the increase from 1884 to 1894 was only 20.92 per cent. The rate of average annual increase has fallen from 45,695, that of the decade 1880-90, to only 36,891 for 1890-94.

The census of 1894 was taken under unusual conditions. Several causes had operated to check the growth of population, as shown during the immediately preceding years, chief among which were the distress in the iron-mining regions of the upper peninsula and the general decline in immigration into the United States. These causes began to operate acutely during 1893, as shown by the great increase in the number of persons requiring relief in this year, by the marked diminution in the number of persons entering this country from Europe, and by the setting in of a strong current of returning migration from the United States to European countries. Added to these factors should also be considered the influence of the internal migration, which is so large an element in the growth of American communities, and through which the State suffered loss of population in two ways: (1) by the movement of inhabitants to other states where the opportunities for obtaining subsistence seemed, for the time at least, more favorable; and (2) by a decline in the normal amount of accessions that Michigan should receive from other states.

These disturbances in the conditions attending the increase of population in this State are, apparently, mainly of a temporary character. The lower peninsula contributed largely to relieve the necessities of the suffering miners in the upper peninsula during the winter of 1893-94, and such aid probably prevented the removal of many citizens who would otherwise have been compelled to leave the State. The reopening of the mines, and the promise of more favorable business conditions for the country at large, would seem to indicate that the lowest point of the period of depression has

been reached, and if this be true, the population of the State may be expected to increase at its former rate. It is true, however, that the stricter immigration laws now in force may continue to limit the amount of immigration to an amount much less than in former years, in which diminution Michigan will share proportionately.

These considerations are of importance as affecting the estimates of population of the inter-census years 1891-93, upon which the vital rates given in Table 4 are based. While, however, the average annual increase of population is considerably less than that obtaining for the decade 1880-90, the difference is not sufficient to materially affect the rates computed upon the extension of the former rate of increase over the years 1891 and 1892 as given in the last report. Indeed, it is believed that the slight difference existing in those rates and the corresponding ones presented in Table 4 (based upon the State census of 1894) should be considered in favor of the former method, since the industrial depression and the consequent sharp decline in the increase of population did not take full effect until 1893. Again, in the extension of the average annual increase beyond 1894, as will be necessary in estimating populations for some years before the United States census of 1900 is taken, it may be preferable, after the lapse of a year or two and when the State appears to have regained its former prosperity and rate of development, to revert to the average annual amount of increase that has held with such great uniformity for several decades past, namely, about 45,000 per annum.

Table 2.—*Populations of Michigan by the decennial National censuses from 1810 to 1890 and by the decennial State censuses from 1854 to 1894; showing the amount and per cent of increase of population between National censuses, State censuses, and National and State censuses.*

National and State censuses.	Population.	Increase of population during each decade by National censuses.		Increase of population during each decade by State censuses.		Increase of population during four and six year periods by National and State censuses.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
National census of 1810	4,762						
National census of 1820	8,765	4,003	84.06				
National census of 1830	31,639	22,874	260.97				
National census of 1840	212,267	180,628	570.90				
National census of 1850	397,654	185,387	87.34				
State census of 1854	509,374					111,720	28.09
National census of 1860	749,113	351,459	88.38			239,739	47.07
State census of 1864	803,745			294,371	57.79	54,632	7.29
National census of 1870	1,184,059	434,946	58.06			380,314	47.32
State census of 1874	1,334,031			530,286	65.98	149,972	12.67
National census of 1880	1,636,937	452,878	88.25			302,906	22.71
State census of 1884	1,853,658			519,627	38.95	216,721	18.24
National census of 1890	2,098,889	456,952	27.92			240,231	12.96
State census of 1894	2,241,454			387,796	20.92	147,565	7.05

VITAL STATISTICS OF MICHIGAN, 1893.

Table 3.—*Showing the population of Michigan as estimated for inter-census years (a) by taking the average annual increase between United States censuses as the actual increase of each year, and (b) by assuming the increase from year to year to be in geometrical ratio.*

Years.	(a) By average annual increase.		(b) Geometric estimate.		Excess of average over geometrical estimate.
	Population.	—log.*	Population.	—log.*	
1868.....	1,097,070	.9598	1,080,500	.9684	16,600
1869.....	1,140,564	.9429	1,131,100	.9465	9,500
1870†.....	1,184,059	.9266	1,184,059	.9266	-----
1871.....	1,229,847	.9103	1,223,000	.9126	6,800
1872.....	1,274,635	.8946	1,263,800	.8985	11,300
1873.....	1,319,922	.8794	1,305,000	.8844	14,900
1874.....	1,365,210	.8648	1,347,800	.8704	17,400
1875.....	1,410,498	.8507	1,392,200	.8563	18,300
1876.....	1,455,786	.8369	1,438,000	.8422	17,800
1877.....	1,501,074	.8236	1,485,400	.8282	15,700
1878.....	1,546,361	.8107	1,534,300	.8141	12,100
1879.....	1,591,649	.7982	1,585,100	.8000	6,500
1880†.....	1,636,937	.7860	1,636,937	.7860	-----
1881.....	1,682,632	.7740	1,677,800	.7753	4,800
1882.....	1,728,327	.7624	1,719,600	.7646	8,700
1883.....	1,774,023	.7510	1,762,400	.7539	11,600
1884.....	1,819,718	.7400	1,806,300	.7432	13,400
1885.....	1,865,413	.7292	1,851,400	.7325	14,000
1886.....	1,911,108	.7187	1,897,600	.7218	13,500
1887.....	1,956,803	.7085	1,944,900	.7111	11,900
1888.....	2,002,499	.6984	1,993,300	.7004	9,200●
1889.....	2,048,194	.6888	2,043,000	.6897	5,200
1890†.....	2,093,889	.6790	2,093,889	.6790	-----
1891†.....	2,130,780	.6715	2,130,000	.6717	800
1892†.....	2,167,672	.6640	2,166,000	.6643	1,700
1893†.....	2,204,563	.6567	2,208,000	.6569	1,600
1894†.....	2,241,454	.6495	2,241,454	.6495	-----

* Logarithms are conveniently used in computing series of vital rates, as, for example, the death-rates from various causes of death in a single year, or the rates from a single cause through a series of years. Formula: $\log. \text{ rate} = \log. \text{ number of deaths} - \log. \text{ population}$. In practice only the decimal part of the logarithms need be used, the proper pointing of the results being known from the general relations of the numbers. As $\log. \text{ population}$ is always subtracted in computing a rate, it is convenient to subtract it beforehand from .0000 and add the difference to $\log. \text{ number of deaths}$. Such differences are given in this table. An example will illustrate the manner of use:—deaths in Michigan from diphtheria in 1886 were 1,117; $\log. 1.117 = .0481$; $.0481 + .7187 = .7668 = \log. (5845)$ or 58.5 per 100,000 population of that year. Four-place logarithms are sufficiently accurate for all ordinary computations of vital rates and are much more convenient in use than six-place logarithms. The geometrical estimations and differences are given in round numbers (nearest hundreds).

† Census years, 1894 being that of the State census.

‡ The numbers given for these years are based on the United States census of 1890 and the State census of 1894.

It will be observed that the results of two methods of estimation are given in Table 3. Of these the one that seemed preferable for the conditions existing in Michigan, that by the average annual increase, has been employed in this report, as in the two reports preceding. The method of estimation by geometrical increase is employed in many registration reports, and is undoubtedly the standard method of estimating population. It may, therefore, be proper to explain why it has not seemed advisable to adopt it, in place of the theoretically objectionable method by equal yearly increments.

The geometrical method of estimating increase of population is best adapted to populations that augment themselves chiefly by natural increase. It assumes, as a fundamental postulate, that as populations increase, the yearly increment of population also increases. The method is substantially the same as that employed in computing compound interest. For example, the population of Michigan in 1890, 2,093,889, increased to 2,241,454 in 1894. What rate of increase per annum, compounded, would correspond to the amount gained? Calling the initial population, in this case that of the year 1890, p , and the rate of constant annual increase, r , we shall have:

$$p(1+r)^4 = p',$$

in which p' represents the population in 1894 after four years of such increase. From this we obtain:

$$1+r = \sqrt[4]{\frac{p'}{p}}; \text{ whence } \log(1+r) = \frac{1}{4}(\log p' - \log p).$$

From this formula the rate of annual increase and the population of any inter-census year are readily calculated by means of logarithms.

The average annual increase obtained by dividing the total increase of the census period by the number of years contained therein, is simply added as the increase for each year estimated in the other method adopted. Concerning this method, Dr Tracy,* remarks, very justly in general: "This method, however, is very faulty, because it assumes that the population increases by arithmetical progression, which could occur only in case the births exceeded the deaths by the same number every year, and there was no immigration or emigration, or else that the excess of immigration was precisely the same in each year—not the ratio of excess, but the numerical excess. These conditions could not occur except as mere coincidences." It is evident, on consideration, that other conditions than those noted by Dr. Tracy might combine to produce an increase of population in arithmetical progression. Thus the rate of annual increase might decline through a census period, either by a progressive diminution in the birth-rate or an increase in the death-rate, so that the true amount of increase for the last year of the period might be precisely the same as that for the first year; or, again, the balance of migration might decline from year to year by such an amount as to nearly correspond with the gain in natural increase resulting from increased population. It is believed that the rate of growth of the population of Michigan has been affected by each of these elements.

In brief the growth of this State in population for the past thirty years has been so much affected by immigration, and also, probably, to some extent by the decreasing rate of natural increase, that the geometrical formula applicable in states and countries which increase chiefly by natural increase does not correctly express the relations of the increments of population for successive years. The crucial test of the applicability of this formula is whether the State does, or does not, as shown by successive census

* Reference Handbook Medical Sciences, Supplement, article on *Vital Statistics*.

enumerations, show an amount of actual increase of population proportioned to the initial population shown by the preceding census. The increase of population in Michigan from 1880 to 1890 was 456,952. This number, based upon an initial population of 1,636,937 in 1880, is practically the same as that shown for the decade 1870-80, or 452,878, which was based upon an initial population, in 1870, of only 1,184,059. As showing that the same conditions yet prevail, the net increase from 1890 to 1894, 147,565, may be compared with that from 1880 to 1884, 216,721. As the increase of population in successive census periods is not at all proportioned to the populations at the beginning of these periods, so the assumption that the latter years of any inter-census period would show a larger amount of increase than the earlier years, because based upon a larger number of inhabitants, is clearly untenable, and the application of the geometrical method, which postulates such proportional gain as population increases, to the estimation of population in states where such conditions obtain, is *mathematically absurd*.

The reasons for the adoption of the method of estimating the population of this State by average annual increase are thus fully given, chiefly because the geometrical method has been accepted as the "standard" one, and thus many persons, supposing it to be applicable under all conditions and cherishing the fallacy that the annual increase of population is proportional to the basis of population supplying it, might suppose that the other method employed in this report gave faulty results.* As a matter of fact, so far as the vital rates based upon either method are concerned, it makes little difference which is employed. This is especially true in the short inter-census period 1890-94, in which the maximum difference, which always lies in favor of the arithmetical method, is only 1,700, a number far too small to produce any appreciable influence upon the rates calculated. For many other states, in which the amounts of increase of population have diminished during the last two census decades, the geometrical formula is equally inapplicable. Nearly all of the southern states (south Atlantic and south central divisions of the census), Maine, Vermont, Ohio, Indiana, Iowa, and Kansas may be so classed, while several other states, although showing a slight increase in the ten-year increment, yet show so small a gain, as is the case with Michigan, that it is apparent that such increase is not proportional to the population that afforded it.

In Table 4 the course of registration in Michigan may be examined from its commencement in 1867 to the present time. The actual numbers of births, marriages and deaths returned for each year are stated, and also the corresponding rates per 1,000 population. By means of five-year averages the general tendencies of the vital statistics of the several classes may be more readily noted than by the study of individual years.

* Thus Dr. Dewey, in a foot-note appended to his table in the Publications of the American Statistical Society, June, Sept., 1892, showing the suicide-rates of the New England states, remarks: "The estimates for population in intercensal years are obtained by applying the customary formula for calculating the geometrical increase of population: $\sqrt[n]{\frac{p}{p'}} = r$, in which p denotes the population at a given census and p' the population at a previous census, and n the number of the intervening years. It is unfortunate that in most of the American Registration Reports, the compilers and editors have been content with the arithmetical rate of increase instead of the geometrical rate in computing intercensal populations. In some instances, where the population is increasing rapidly and the census is not taken oftener than once in ten years, a considerable error is introduced which ought to be avoided."

Table 4.—*Number of marriages, births and deaths registered in Michigan from 1867 to 1893, with the excess of births over deaths for each year; also the rates per thousand of persons married, births, deaths and excess of births over deaths for each year based on populations of United States censuses and estimated populations for inter-census years. Averages for the quinquennial periods 1871-75, 1876-80, 1881-85, 1886-90. (Still-births included in both births and deaths.)*

Years.	Popula- tion.	Michigan registration returns, 1867-93.				Rates per thousand of population.			
		Number of mar- riages.	Number of births.	Number of deaths.	Excess of births over deaths.	Persons married.	Births.	Deaths.	Excess of births over deaths.
1867*	1,053,574	4,312	14,000	4,409	9,591				
1868	1,097,070	8,697	25,020	8,285	16,735	15.9	22.8	7.5	15.3
1869	1,140,561	8,459	27,093	9,145	17,948	14.8	23.8	8.0	15.8
1870†	1,184,059	9,791	26,663	10,766	15,897	16.5	22.5	9.1	13.4
1871	1,229,347	10,605	25,992	9,728	16,264	17.3	21.1	7.9	13.2
1872	1,274,635	10,752	27,993	13,371	14,622	16.9	22.0	10.5	11.5
1873	1,319,922	11,897	34,608	14,258	20,350	18.0	26.2	10.8	15.4
1874	1,365,210	12,255	31,151	12,500	18,651	18.0	22.8	9.2	13.6
1875	1,410,498	11,551	31,958	11,990	19,968	17.4	22.7	8.5	14.2
Av. 1871-75	1,319,922	11,472	30,340	12,369	17,971	17.4	23.0	9.4	13.6
1876	1,455,786	11,913	34,235	12,576	21,659	16.4	23.5	8.6	14.9
1877	1,501,074	11,899	33,395	12,919	20,476	15.9	22.2	8.6	13.6
1878	1,546,361	12,880	35,162	12,766	22,396	16.7	22.7	8.3	14.4
1879	1,591,649	13,892	34,122	14,407	19,715	17.5	21.4	9.1	12.3
1880†	1,636,937	14,935	35,323	16,102	19,221	18.2	21.6	9.8	11.8
Av. 1876-80	1,546,361	13,104	34,447	13,754	20,693	16.9	22.3	8.9	13.4
1881	1,682,632	15,894	34,749	19,288	15,511	18.9	20.7	11.4	9.3
1882	1,728,327	16,830	37,026	16,425	20,601	19.5	21.4	9.5	11.9
1883	1,774,023	17,174	40,809	16,906	23,903	19.4	23.0	9.5	13.5
1884	1,819,718	15,989	40,408	18,056	22,352	17.6	22.2	9.9	12.3
1885	1,865,413	15,885	42,119	16,646	25,473	17.0	22.6	8.9	13.7
Av. 1881-85	1,774,023	16,354	39,022	17,454	21,568	18.4	22.0	9.8	12.2
1886	1,911,108	16,665	41,095	18,187	22,908	17.4	21.5	9.5	12.0
1887	1,956,803	17,179	46,226	19,482	26,744	17.6	23.6	10.0	13.6
1888	2,002,499	17,297	48,952	21,761	27,188	17.3	24.4	10.9	13.5
1889	2,048,194	18,317	49,272	20,315	28,957	17.9	24.1	9.9	14.2
1890†	2,093,889	18,661	52,806	21,642	30,664	17.8	25.0	10.3	14.7
Av. 1886-90	2,002,499	17,624	47,570	20,278	27,292	17.6	23.8	10.1	13.7
1891‡	2,130,780	19,244	50,812	22,079	28,733	18.0	23.8	10.4	13.4
1892‡	2,167,672	20,107	46,221	21,729	24,492	18.6	21.3	10.0	11.3
1893‡	2,204,563	19,197	47,723	21,982	25,740	17.4	21.6	10.0	11.6

* From April 5 to December 31, 1867. This was the first year of State registration, and the returns are not comparable with later years when the system was fully established.

† Census years.

‡ Estimated populations for the years 1891-93 based upon the average annual increase between the censuses of 1890 and 1894.

While it should be understood that the absolute rates given in this table, except those for marriages, are far below the truth, it is probable that the returns of births and deaths are defective by about the same amount each year, and hence the variations of the birth-rates and death-rates shown in this table may be accepted as approximately reliable. To this statement an important exception must, unfortunately, be made in the rates given for the years 1887-91 for births, and also, though probably to a less extent, for deaths. This irregularity arises from fraudulent returns made from the city of Detroit; its nature and the probable amount of sophistication were explained in the last report.*

Table 5 enables the results of the various enumerations of births and deaths in Michigan that have been made in connection with the several United States and State censuses to be compared with one another, and with the results of the State registration. While the rates obtained by the census methods are somewhat higher than those by the annual registration, they are too low to correctly show the facts. All attempts to obtain vital statistics by enumeration after the close of the census year are necessarily imperfect.

Table 5.—*Births, deaths and natural increase in Michigan, with rates per thousand population according to the United States censuses of 1870, 1880 and 1890, and the State censuses of 1874 and 1884. (Still-births included.)*

Years.	Popula- tion.	Census returns.			Rates per 1,000 population.		
		Births.	Deaths.	Natural increase.	Births.	Deaths.	Natural increase.
National census of 1870	1,184,059	34,530	11,181	23,349	29.2	9.4	19.8
State census of 1874	1,334,031	.....	* 14,280	.....	.....	10.7	.....
National census of 1880	1,636,937	45,843	19,743	26,100	28.0	12.1	15.9
State census of 1884	1,853,658	53,775	19,979	33,796	29.0	10.7	18.3
National census of 1890	2,093,889	51,981	25,016	26,915	24.8	11.9	12.9

* For calendar year 1873.

* The irregularities in the returns from Wayne county, which have been alluded to in discussing Table 2 [Report of 1892], affect the birth-rates, and to a lesser degree the death-rates, for the years 1887 to 1891, inclusive. It is impossible to exactly determine the number of these fraudulent returns for each year, but on the assumption that the returns from Wayne county should have been fairly uniform for each year from 1886 to 1892, a deduction can be made in the total number of births and deaths returned in those years for the county and for the State that will probably lead to more correct conclusions when comparisons of the rates based thereon are made with previous years. We shall have, instead of the numbers given in the table, the following estimates for the years 1887-91:

	1887.	1888.	1889.	1890.	1891.
Number of births	42,116	42,091	44,838	42,916	45,561
Birth-rate per 1,000	21.5	21.0	21.9	20.5	21.3
Number of deaths	19,329	19,919	19,583	19,726	21,141
Death-rate per 1,000	9.9	9.9	9.7	9.4	9.9

The average birth-rate for the five-year period 1886-90 would be 21.3 instead of 23.8, the average death-rate 9.7 instead of 10.1; the rate of natural increase, 11.6 per 1,000, not 13.6. The series of birth-rates as altered appears more reasonable than before, there being a decrease in the birth-rate of every State in this country, with only four unimportant exceptions, during the decade 1880-90, as determined by the United States censuses.—*Twenty-sixth Michigan Registration Report, 1892, pp. 6, 8.*

BIRTHS, DEATHS AND NATURAL INCREASE.

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Table 6.—Number of births, deaths, and excess of births registered in Michigan for the years 1888-93, by months, with the average excess of births for the five-year period, 1888-92. (Still-births included in both births and deaths.)

	Total.	Months.												Unk*.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
1888.....	48,952	3,531	3,516	4,099	3,953	4,214	4,183	4,223	4,514	4,415	4,805	3,311	4,193	45
Deaths.....	21,764	1,416	1,535	1,865	1,909	1,888	1,627	1,789	2,169	1,978	1,848	1,642	2,012	68
Excess of births.....	27,188	2,115	1,981	2,234	2,044	2,326	2,556	2,434	2,345	2,437	2,957	1,669	2,181	-21
1889.....	49,272	3,340	3,104	4,001	4,057	4,288	4,050	4,252	4,526	4,832	4,292	4,331	4,646	53
Deaths.....	20,315	1,409	1,266	1,676	1,585	1,454	1,359	1,677	2,214	2,025	1,894	1,712	1,951	63
Excess of births.....	28,957	1,931	1,838	2,325	2,472	2,794	2,691	2,575	2,312	2,807	2,398	2,619	2,695	-10
1890.....	53,306	4,180	3,718	4,356	4,407	4,568	4,313	4,397	4,651	4,517	4,219	4,323	4,765	42
Deaths.....	21,642	1,745	1,599	1,776	1,907	1,704	1,633	1,649	2,032	1,893	1,908	1,789	2,027	31
Excess of births.....	30,664	2,335	2,119	2,580	2,500	2,864	2,680	2,748	2,619	2,625	2,311	2,534	2,738	11
1891.....	50,812	3,629	3,534	4,315	4,238	4,465	4,078	4,293	4,702	4,646	4,940	4,098	4,391	53
Deaths.....	23,079	1,496	1,385	1,774	2,074	1,782	1,560	1,678	2,147	1,978	2,011	1,860	2,351	48
Excess of births.....	28,733	2,143	2,149	2,571	2,164	2,733	2,518	2,615	2,555	2,678	2,929	2,238	2,040	5
1892.....	46,221	3,226	3,315	3,766	3,928	3,977	3,631	3,929	4,168	4,088	3,915	3,853	4,344	49
Deaths.....	21,729	2,152	1,687	1,785	1,878	1,700	1,481	1,678	1,942	1,802	1,592	1,788	1,949	45
Excess of births.....	24,492	1,074	1,628	2,010	2,050	2,277	2,200	2,251	2,226	2,286	2,323	2,065	2,395	4
1893.....	47,722	3,346	3,391	4,089	3,934	3,924	3,901	4,156	4,381	4,246	4,165	3,916	4,293	58
Deaths.....	21,982	1,413	1,454	1,789	1,668	1,744	1,616	1,695	2,042	2,166	1,909	1,818	2,605	63
Excess of births.....	25,740	1,933	1,937	2,290	2,266	2,180	2,285	2,463	2,339	2,080	2,256	2,098	1,688	-5
Monthly average of excess of births for five years 1888-92.....	28,007	1,930	1,923	2,344	2,266	2,608	2,513	2,485	2,411	2,476	2,324	2,315	2,410	-2

* The number of deaths returned in unknown months exceeds the number of births so returned for certain years given in the table. For this reason the minus sign (-) is prefixed to the differences and they should be read as the excess of deaths over births.

VITAL STATISTICS OF MICHIGAN, 1893.

Table 7.—*Statement, by sex, color and nativity, of the births, marriages and deaths returned for 1893, with the corresponding population in 1890.*

Color, race and nativity.	Sex.	Population by U. S. census of 1890.	Number of marriages returned, 1893.		Number of births returned, 1893. §	Number of deaths returned, 1893.
			Couples. †	Persons married.		
All colors and nativities	Total	2,093,889	19,197	38,394	47,722	21,982
	Males	1,091,780	-----	19,197	24,781	11,772
	Females	1,002,109	-----	19,197	22,909	10,142
	Unknown	-----	-----	-----	79	68
White	Total	2,072,884	18,984	37,970	47,412	21,655
	Males	1,080,717	-----	18,984	24,587	11,596
	Females	992,167	-----	18,986	22,752	10,006
	Unknown	-----	-----	-----	78	63
Colored	Total	21,005	213	424	301	296
	Males	11,063	-----	213	146	168
	Females	9,942	-----	211	155	128
Unknown color	Total	-----	-----	-----	9	21
Colored.	Black	Total	-----	-----	-----	-----
	Mulatto	Total	-----	-----	-----	-----
	Indian	Total	-----	-----	-----	-----
	Asiatic	Total	-----	-----	-----	-----
Native-born	Total	1,550,009	11,184	26,635	48,010	16,187
	Males	790,703	-----	13,069	22,892	8,485
	Females	759,306	-----	13,616	25,118	7,634
	Unknown	-----	-----	-----	-----	68
Foreign-born	Total	543,880	3,554	11,190	45,443	5,061
	Males	301,077	-----	6,111	23,838	2,855
	Females	242,803	-----	5,079	21,605	2,206
Unknown nativity	Total	-----	3	519	1,991	734

* Includes 1,376 quadroons and 1,222 octoroons.

† Includes 120 Chinese and 38 Japanese.

‡ This column includes only those marriages in which the parties were of the same color or nativity. The fact that mixed marriages (see Part II for particulars) occur, in which the parties are of different colors or nativities, causes the statements by individuals married to differ from those by couples.

§ The statements of nativity in this column refer to the nativity of the parents of the children born in 1893. Thus 22,892 native-born males became fathers (fathers of twins counted twice), 23,888 foreign-born males, etc.

NATURAL INCREASE BY MONTHS.

In Table 6 the returns of births and deaths are compared by months for 1893 and the five years preceding, and the average natural increase of each month is stated for that period. This table is much affected by the irregularities in the returns of births from Wayne county for the years 1887-91, and does not normally, under our faulty system of registration, show the correct relations between the months. The returns of either births or deaths for December, or any of the latter months of the year are relatively more perfect than those for January, or any of the early months. The reason for this difference in accuracy is the fact that less time elapses from the occurrence of the births or deaths to their enumeration, such loss of time being very productive of errors and omissions.

The elements of population, by color, nativity and sex, are presented in Table 7 for convenient comparison with the returns of births, marriages and deaths of the same classes. The data given on population are those of the last United States census, 1890, the State census of 1894 not having been completely compiled at the time of the preparation of this report. From the early bulletins of the latter, however, the statement of total population by nativity may be obtained (sex not specified), and may be compared with the corresponding figures in 1890. There were in Michigan in June, 1894, 1,670,797 native-born and 570,657 foreign-born inhabitants. While the number of native-born persons in the State has increased 120,788, or 7.79 per cent from 1890 to 1894, the foreign-born population has only increased 26,777, or 4.92 per cent in the same time. The distribution of native- and foreign-born population by counties, together with the increase of each class through the last four-year census period, may be found in Table 10 at the conclusion of this part of the present report.

BIRTH-, MARRIAGE- AND DEATH-RATES BY COUNTIES, 1893.

Table 8 presents the returns of births, marriages and deaths from each county of the State, together with the rates per 1,000 population, the latter being estimated in each case from the censuses of 1890 and 1894.

The marriage-rates run much more uniformly than those of either births or deaths, and probably represent the true relations of the counties much more accurately. A few exceptionally low rates may be noted, as Alcona, 9.2; Iron, 10.8; Keweenaw, Macomb, each 13.4; Manitou, 8.9; Presque Isle, 11.1. All of these, except Macomb, are small counties in which the decrease of a few marriages would largely depress the rate; all moreover, except Macomb, are in the northern part of the State. The reason for the low marriage-rate of Macomb county is not known, as the returns appear to be complete. The highest marriage-rates shown are for the counties of Berrien, Branch, Chippewa, Crawford, Gogebic, Grand Traverse, Otsego and Schoolcraft, each of which runs over 21 persons married per 1,000 population.

Birth-rates are quite variable, although perhaps on the whole more uniform than death-rates. The highest rates recorded are for the following counties: Dickinson, 39.9; Gogebic, 51.2; Houghton, 41.0; Keweenaw, 36.8; Presque Isle and Wayne, each 30.2. The lowest rates are: Alger, 13.4; Branch, 13.5; Calhoun, 14.2; Cass, 13.9; Crawford, 13.7; Eaton, 12.6; Hillsdale, 8.4; Ionia, 13.8; Lenawee, 13.5; Oakland, 13.1; Oscoda, 10.9;

Roscommon, 5.1; Shiawassee, 13.0; St. Joseph, 13.7; Washtenaw, 11.6. The occurrence of some of the oldest and largest counties in the State in the latter list is very significant. Their presence is not accidental, but is due to the very low and still declining birth-rate among the native-born inhabitants of the State, of whom the population of the counties in question is chiefly constituted.

If the enumeration of deaths was accurately made in each part of the State, or even if the same degree of inaccuracy uniformly obtained in the several counties, the death-rates given in this table would be very suggestive as to the relative degrees of sanitary efficiency and climatic advantages enjoyed by the different portions of the State. These returns are, however, not reliable; the fact that one county apparently shows a higher death-rate than another is no evidence, under present conditions, that such is the actual truth concerning them. The accuracy of registration may even vary in the same county very widely from one year to another, and it is impossible, with the knowledge of local conditions obtainable by this Department, to make any very positive assertions as to the relative healthfulness of different portions of the State except in very general terms. It should not be forgotten, moreover, that the age and sex constitution of the inhabitants in different parts of the State, as well as their nativity, varies greatly.

Taking the returns as made, we have the following counties with especially high (relatively) death-rates: Alpena, 13.3; Dickinson, 16.7; Gogebic, 18.6; Houghton, 12.5; Iron, 16.3; Luce, 12.6; Marquette, 12.9; Wayne, 13.5. Death-rates below 7.0 were reported from the following: Alger, 5.2; Antrim, 4.4; Arenac, 5.7; Cheboygan, 6.6; Gladwin, 6.1; Gratiot, 6.5; Isabella, 6.6; Lake, 6.9; Mackinac, 6.2; Manitou, 5.5; Mecosta, 6.8; Midland, 6.9; Montmorency, 6.4; Newaygo, 4.4; Ogemaw, 4.1; Ontonagon, 5.1; Oscoda, 2.2; Roscommon, 1.1; Schoolcraft, 6.8; Wexford, 6.8. Life in some of these latter counties would seem to be akin to immortality, judging from the death-rate. Of course, the very low death-rates simply show carelessness or inefficiency on the part of the officers whose duty it is to make the returns. Thus in Roscommon county, from which only two deaths were compiled, giving the absurdly low death-rate of 1.1 per 1,000 per annum, there occurred no less than seven deaths from diphtheria in one township (Roscommon), which were not reported to this Department until too late for compilation in the present report. The law requires that all returns of births and deaths shall be made by the supervisors to the county clerks on or before June 1 of each year, and that the county clerks shall make their reports on or before the first day of September. Every effort is made by the State Department to secure promptness in these reports, both to the county clerk and to this Department, but it is found that a certain number of supervisors will delay as long as possible and evade the duty of enumeration entirely if possible. Delayed returns are added to the yearly tables as late as additions can be made without seriously embarrassing and delaying the work of compilation—up to December 1; at this date the tables close and all subsequent returns remain in the delinquent list.

Table 8.—*Number of marriages, births, deaths and excess of births over deaths registered in Michigan for the year 1893, by counties, with rates per 1,000 estimated population. (Still-births included in both births and deaths.)*

State and counties.	Estimated population of Michigan, June, 1893.	Number of marriages registered in 1893.	Number of births registered in 1893.	Number of deaths registered in 1893.	Excess of births over deaths in 1893.	Rates per 1,000 estimated population.			
						Persons married.	Births.	Deaths.	Natural increase.
State	* 2,204,568	19,197	47,722	21,982	25,740	17.4	21.6	10.0	11.6
Alcona.....	5,411	25	105	63	42	9.2	19.4	11.6	7.7
Alger.....	1,348	12	18	7	11	17.8	13.4	5.2	8.2
Allegan.....	39,129	332	743	432	311	17.0	19.0	11.0	8.0
Alpena.....	17,182	152	455	228	227	17.7	26.5	13.3	13.2
Antrim.....	11,924	90	209	53	156	15.1	17.5	4.4	13.0
Arenac.....	6,627	49	151	38	113	14.8	22.8	5.7	17.1
Baraga.....	3,933	34	146	44	102	17.3	37.1	11.2	25.9
Barry.....	23,720	184	370	211	159	15.5	15.6	8.9	6.7
Bay.....	60,072	454	1,625	708	917	15.1	27.1	11.8	15.3
Benzie.....	7,354	75	148	65	83	20.4	20.1	8.8	11.3
Berrien.....	44,542	471	681	393	288	21.1	15.3	8.8	6.5
Branch.....	26,351	286	357	273	84	21.7	13.5	10.4	3.1
Calhoun.....	46,479	433	661	437	224	18.6	14.2	9.4	4.8
Cass.....	21,120	206	293	173	120	19.5	13.9	8.2	5.7
Charlevoix.....	10,620	98	191	75	116	18.5	18.0	7.1	10.4
Cheboygan.....	13,419	109	262	89	173	16.2	19.5	6.6	12.9
Chippewa.....	14,494	155	272	101	171	21.3	18.8	7.0	11.8
Clare.....	7,871	71	167	59	108	18.0	21.2	7.5	13.7
Clinton.....	26,324	253	439	205	234	19.2	16.7	7.8	8.9
Crawford.....	2,773	33	38	20	18	23.8	13.7	7.2	6.5
Delta.....	18,277	173	444	175	269	18.9	24.3	9.5	14.8
Dickinson†.....	14,774	154	590	247	343	20.8	39.9	16.7	23.2
Eaton.....	32,483	295	409	271	138	18.2	12.6	8.3	4.3
Emmet.....	9,975	90	215	86	129	18.0	21.6	8.6	13.0
Genesee.....	40,272	345	667	424	243	17.1	16.6	10.5	6.1
Gladwin.....	4,727	33	72	29	43	14.0	15.2	6.1	9.1
Gogebic.....	13,854	146	709	257	452	21.0	51.2	18.6	32.6
Grand Traverse.....	16,474	196	279	196	83	23.8	16.9	11.9	5.0
Gratiot.....	28,745	263	499	186	313	18.3	17.4	6.5	10.9

* Total includes 34 from Isle Royal and 12 lost in calculation by separate counties.

† Dickinson county was formed in 1891 from portions of Iron, Marquette and Menominee counties. See p. 8, Registration Report for 1891, for statement of population detached. The populations of each in 1890, whose increase to 1894, less one-fourth, affords the estimate for 1893, given above, were as follows: Dickinson, 15,000; Iron, 4,018; Marquette, 35,004; Menominee, 20,570.

Table 8.—CONTINUED.—Returns and rates per 1,000 population, 1893.

Counties.	Estimated population of Michigan, June, 1893.	Number of marriages registered in 1893.	Number of births registered in 1893.	Number of deaths registered in 1893.	Excess of births over deaths in 1893.	Rates per 1,000 estimated population.			
						Persons married.	Births.	Deaths.	Natural increase.
Hillsdale†	30,368	305	255	289	—34	20.1	8.4	9.5	—1.1
Houghton	41,978	375	1,720	525	1,195	17.9	41.0	12.5	28.5
Huron	31,323	216	860	300	560	13.8	27.5	9.6	17.9
Ingham	39,183	338	605	347	258	17.3	15.4	8.9	6.5
Ionia	34,313	323	475	306	169	18.8	13.8	8.9	4.9
Iosco	13,060	93	320	120	200	14.2	24.5	9.2	15.3
Iron§	4,974	27	144	81	63	10.8	29.0	16.3	12.7
Isabella	20,775	180	451	138	313	17.3	21.7	6.6	15.1
Jackson	46,153	420	714	537	177	18.2	15.5	11.6	3.9
Kalamazoo	41,360	412	787	459	328	19.9	19.0	11.1	7.9
Kalkaska	5,518	41	96	44	52	14.8	17.4	8.0	9.4
Kent	118,920	1,219	2,511	1,244	1,267	20.5	21.1	10.5	10.6
Keweenaw	2,827	19	104	30	74	13.4	36.8	10.6	26.2
Lake	6,048	54	94	42	52	17.8	15.5	6.9	8.6
Lapeer	28,959	233	490	217	273	16.1	16.9	7.5	9.4
Leelanau	9,032	73	218	77	141	16.2	24.1	8.5	15.6
Lenawee	48,518	451	656	406	250	18.5	13.5	8.4	5.1
Livingston	20,541	192	310	186	124	15.7	15.1	9.1	6.0
Luce	2,375	22	62	30	32	18.5	26.1	12.6	18.5
Mackinac	7,385	67	115	46	69	18.1	15.6	6.2	9.4
Macomb	32,240	216	591	305	286	13.4	13.3	9.5	8.8
Manistee	25,642	222	741	216	525	17.3	28.9	8.4	20.5
Manitou	903	4	22	5	17	8.9	24.4	5.5	18.9
Marquette§	38,004	333	1,477	491	986	17.5	38.9	12.9	26.0
Mason	17,910	152	487	160	327	17.0	27.2	8.9	18.3
Mecosta	20,472	186	371	140	231	18.2	18.1	6.8	11.3
Menominee§	22,945	174	650	190	460	15.2	28.3	8.3	20.0
Midland	12,582	110	249	87	162	17.5	19.8	6.9	12.9
Missaukee	6,479	59	160	54	106	18.2	24.7	8.3	16.4
Monroe	32,969	289	635	291	344	17.5	19.3	8.8	10.5
Montcalm	33,776	325	571	264	307	19.2	16.9	7.8	9.1

† In Hillsdale county the deaths exceed the births, according to the returns; hence the natural increase for the year is negative. This relation has probably no significance beyond indicating unusually imperfect returns from this county for 1893.

§ See note on preceding page relative to the counties of Dickinson, Iron, Marquette and Menominee.

Table 8.—CONCLUDED.—Returns and rates per 1,000 population, 1893.

Counties.	Estimated population of Michigan, June, 1893.	Number of marriages registered in 1893.	Number of births registered in 1893.	Number of deaths registered in 1893.	Excess of births over deaths in 1893.	Rates per 1,000 estimated population.			
						Persons married.	Births.	Deaths.	Natural increase.
Montmorency	2,198	17	23	14	9	15.5	10.5	6.4	4.1
Muskegon	37,996	285	929	412	517	15.0	24.4	10.8	13.6
Newaygo	19,462	157	325	86	239	16.2	16.7	4.4	12.3
Oakland	42,312	294	554	402	152	13.9	13.1	9.5	3.6
Oceana	16,372	141	312	121	191	17.2	19.1	7.4	11.7
Ogemaw	5,623	48	107	23	84	17.1	19.0	4.1	14.9
Ontonagon	6,094	40	130	31	99	13.1	21.3	5.1	16.2
Osceola	16,014	139	348	116	232	17.4	21.7	7.2	14.5
Oscoda	1,829	15	20	4	16	16.4	10.9	2.2	8.7
Otsego	4,664	55	76	43	33	23.6	16.3	9.2	7.1
Ottawa	38,146	318	969	367	602	16.7	25.4	9.6	15.8
Presque Isle	5,604	31	169	57	112	11.1	30.2	10.2	20.0
Roscommon	1,751	17	9	2	7	19.4	5.1	1.1	4.0
Saginaw	81,949	676	2,238	958	1,280	16.5	27.3	11.7	15.6
Sanilac	33,605	247	830	251	579	14.7	24.7	7.5	17.2
Schoolcraft	6,800	73	199	46	153	21.5	29.3	6.8	22.5
Shiawassee	32,358	300	419	254	165	18.5	13.0	7.8	5.2
St. Clair	53,763	443	1,145	566	579	16.5	21.3	10.5	10.8
St. Joseph	25,154	299	344	220	124	19.0	13.7	8.7	5.0
Tuscola	33,935	257	631	250	381	15.1	18.6	7.4	11.2
Van Buren	30,930	254	465	307	158	16.4	15.0	9.9	5.1
Washtenaw	43,171	373	500	355	145	17.3	11.6	8.2	3.4
Wayne	283,650	2,297	8,570	3,834	4,736	16.2	30.2	13.5	16.7
Wexford	13,355	134	254	91	163	20.0	19.0	6.8	12.2

VARIATIONS IN RETURNS, BY COUNTIES, FROM 1892 TO 1893.

This table, introduced for the first time in the last report, is regarded as a very important one, not only for the general interest of its contents, but because it calls direct attention to any marked variation in the returns of any class of statistics from individual counties, and thus precludes the imposition of fraudulent returns to a large amount from any county without detection, as was the case with the fraudulent returns from Wayne county for the years 1887-91.

There is a decrease in the number of marriages returned for 1893 of 910, as compared with the preceding year. The reasons for this decline have already been men-

tioned, so far as they apply to the State as a whole, and need not be further discussed. Of the 84 counties in the State, 47 show a decreased number of marriages; 36 a slight increase; and one county, Ontonagon, reports exactly the same number for each year. The greatest losses are shown in Wayne county, 243; Bay, 62; Eaton, 60; Huron, 65; Marquette, 63. The greatest amounts of gain are in Berrien, 51; Grand Traverse, 35; Lenawee, 30; Montcalm, 48; Ottawa, 38. The widely distributed decline is the most striking feature of the comparison.

While the State as a whole showed an increase of 1,501 births for 1893 over 1892, no less than 30 counties showed a decrease. The largest amount of decrease occurred in the counties of Wayne, 209; Hillsdale, 138; and Calhoun, 81. The principal counties showing an increase for the year were the following: Berrien, 115; Huron, 105; Kalamazoo, 102; Lapeer, 113; Ottawa, 145; Saginaw, 320; Sanilac, 131; St. Clair, 105. As shown in Part II, the increased number of births for the year is almost solely made up of increase in the number of children born of native-born parents; the total number of children born of parents both foreign-born was only 20 more in 1893 than in 1892. It is interesting to compare the distribution of the minus signs (showing diminution in the returns) in the column of births with those in the column of marriages. The effect of the hard times was primarily on the marriage-rate of the State; its secondary influence on the birth-rate may be expected to be seen more clearly in the report for the following year (1894) than in the present one. Indeed, its influence will probably be clearly shown in the vital statistics of the State for a number of years to come, by a tendency to a lower birth-rate and death-rate in the counties of the upper peninsula. It is, of course, possible that with the coming of prosperity again the pendulum may vibrate to the other extreme, and the net effects for a sufficiently long period be very minute.

The deaths returned from 33 counties were less in 1893 than in 1892; from 51 counties the numbers returned for 1893 were greater. This does not imply that the year was more fatal, for, with the yearly increase of population, it is usual that the number of deaths returned should also increase. The counties showing the largest amounts of increase were the following: Alpena, 74; Allegan, 76; Bay, 114; Berrien, 79; Grand Traverse, 60; Huron, 75; Shiawassee, 70; Wayne, 112. In many cases, such increase is probably due simply to greater accuracy of enumeration in 1893. The following counties are among those showing less numbers of deaths returned: Gogebic, 199; Kent, 77; Marquette, 83; Saginaw, 129; St. Joseph, 95; Washtenaw, 81. The returns from Gogebic county have been very irregular and unsatisfactory for some years, so that it is difficult to define the meaning of the very large falling off in mortality reported, or to be sure that it has any meaning at all beyond showing unwarrantable variations in the returns. The basis of reliable vital statistics, as, in fact, the basis of reliable statistics of any nature, is uniformity and accuracy in methods of collection of the primary data; when these are uncertain and liable to be altered by irregular and unaccountable causes, the most careful study of them is insufficient to obtain results of value. Gogebic county is cited, as it has been previously cited in these reports, as affording a particularly striking instance of the unsatisfactory character of our present system of collection of vital data; while the irregularities in the returns from this county are, perhaps, more gross than for any other county in the State (with the exception of Wayne county, whose returns were falsified by wholesale for some years), similar imperfections exist in the returns made from every other county in the State.

Table 9.—Comparing, by counties, the total number of marriages, births and deaths registered in Michigan for the years 1892-3; showing also the increase (or decrease) of the number registered for 1893 as compared with that of the preceding year. (Still-births included in births and deaths.)

State and Counties.	Marriages.			Births.			Deaths.		
	Number in 1892.	Number in 1893.	*Increase or decrease over 1892.	Number in 1892.	Number in 1893.	*Increase or decrease over 1892.	Number in 1892.	Number in 1893.	*Increase or decrease over 1892.
State	19,197	20,107	—910	47,722	46,221	1,501	21,982	21,729	253
Alcona	25	40	—15	105	111	—6	63	40	23
Alger	12	8	4	18	24	—6	7	10	—3
Allegan	382	361	—29	743	702	41	432	356	76
Alpena	152	161	—9	455	459	—4	228	154	74
Antrim	90	84	6	209	226	—17	53	87	—34
Arenac	49	50	—1	151	185	16	38	51	—13
Baraga	34	45	—11	146	91	55	44	41	3
Barry	184	217	—33	370	343	27	211	164	47
Bay	454	516	—62	1,625	1,539	86	708	594	114
Benzie	75	84	—9	148	98	50	65	53	12
Berrien	471	420	51	681	566	115	393	314	79
Branch	286	302	—16	357	312	45	273	255	18
Calhoun	433	426	7	661	742	—81	487	409	28
Cass	206	188	18	298	247	46	173	175	—2
Charlevoix	98	88	15	191	166	25	75	75	—
Cheboygan	109	95	14	262	301	—39	89	110	—21
Chippewa	155	128	27	272	267	5	101	98	3
Clare	71	68	3	167	155	12	59	45	14
Clinton	258	237	16	489	482	—43	205	241	—36
Crawford	33	28	5	38	52	—14	20	23	—3
Delta	178	147	26	444	484	—40	175	141	34
Dickinson	154	147	7	590	548	42	247	194	53
Eaton	295	355	—60	409	378	31	271	288	—17
Emmet	90	105	—15	215	186	79	86	64	22
Genesee	345	367	—22	667	603	64	424	407	17
Gladwin	33	43	—10	72	67	5	29	13	16
Gogebio	146	286	—90	709	678	31	257	456	—199
Gd. Traverse	196	161	35	279	254	25	196	186	60
Gratiot	263	265	—2	499	473	26	186	188	—2
Hilledale	305	315	—10	255	393	—138	289	323	—34
Houghton	375	399	—24	1,720	1,691	29	525	552	—27
Huron	216	231	—65	860	755	105	300	225	75

* In many cases, which are indicated by the minus sign (—), a decrease is shown for 1893 as compared with the preceding year.

Table 9.—CONTINUED.—Returns of 1892 and 1893 compared.

Counties.	Marriages.			Births.			Deaths.		
	Number in 1892.	Number in 1893.	*Increase or decrease over 1892.	Number in 1893.	Number in 1892.	*Increase or decrease over 1892.	Number in 1893.	Number in 1892.	*Increase or decrease over 1892.
Ingham.....	238	224	-14	605	609	-4	347	336	-11
Ionia.....	323	339	16	475	438	-37	306	265	-41
Iosco.....	98	114	16	320	283	-37	120	168	48
Iron.....	27	47	20	144	209	65	81	62	-19
Isabella.....	180	212	32	451	442	-9	138	116	-22
Jackson.....	420	440	20	714	662	-52	537	490	-47
Kalamazoo.....	412	433	21	787	685	-102	459	433	-26
Kalkaska.....	41	49	8	96	106	10	44	48	4
Kent.....	1,219	1,242	23	2,511	2,551	40	1,244	1,321	77
Keweenaw.....	19	32	13	104	117	13	30	52	22
Lake.....	54	49	-5	94	94	0	42	28	-14
Lapeer.....	283	287	4	490	377	-113	217	197	-20
Leelanau.....	73	62	-11	213	194	-19	77	52	-25
Lenawee.....	451	421	-30	656	583	-73	406	412	6
Livingston.....	192	183	-9	310	250	-60	186	166	-20
Luce.....	22	24	2	62	40	-22	30	24	-6
Mackinac.....	67	51	-16	115	125	10	46	43	-3
Macomb.....	216	243	27	591	592	1	305	335	30
Manistee.....	222	229	7	741	732	-9	216	204	-12
Manitou.....	4	2	-2	22	7	-15	5	2	-3
Marquette.....	333	306	-27	1,477	1,526	49	491	574	83
Mason.....	152	172	20	487	454	-33	160	151	-9
Mecosta.....	186	190	4	371	357	-14	140	126	-14
Menominee.....	174	162	-12	650	657	7	190	174	-16
Midland.....	110	90	-20	249	205	-44	87	89	2
Missaukee.....	59	45	-14	160	164	4	54	47	-7
Monroe.....	289	327	38	635	609	-26	291	296	5
Montcalm.....	325	277	-48	571	539	-32	264	241	-23
Montmorency.....	17	18	1	23	31	8	14	6	-8
Muskegon.....	235	331	96	929	1,023	94	412	449	37
Newaygo.....	157	169	12	325	313	-12	86	116	30
Oakland.....	294	329	35	554	512	-42	402	445	43
Oceana.....	141	115	-26	312	301	-11	121	87	-34
Ogemaw.....	48	40	-8	107	108	1	23	32	9
Ontonagon.....	40	40	0	130	68	-62	31	20	-11
Oscoda.....	139	119	-20	348	314	-34	116	101	-15

* In many cases, which are indicated by the minus sign (-), a decrease is shown for 1893 as compared with the preceding year.

Table 9.—CONCLUDED.—Returns of 1892 and 1893 compared.

Counties.	Marriages.			Births.			Deaths.		
	Number in 1893.	Number in 1892.	*Increase or decrease over 1892.	Number in 1893.	Number in 1892.	*Increase or decrease over 1892.	Number in 1893.	Number in 1892.	*Increase or decrease over 1892.
Oscoda	15	14	1	20	31	—11	4	12	—8
Otsego	55	42	13	76	52	24	43	33	10
Ottawa	318	280	38	969	824	145	367	351	16
Presque Isle ..	31	28	3	169	166	3	57	32	25
Roscommon ..	17	9	8	9	39	—30	2	13	—11
Saginaw	676	727	—51	2,233	1,918	320	958	1,087	—129
Sanilac	247	277	—30	830	699	131	251	287	—36
Schoolcraft ..	73	82	—9	199	144	55	46	46	—
Shiawassee ..	300	337	—37	419	441	—22	254	184	70
St. Clair	443	502	—59	1,145	1,040	105	566	575	—9
St. Joseph ..	239	211	28	344	341	3	220	315	—95
Tuscola	257	243	14	631	542	89	250	219	31
Van Buren ..	254	273	—19	465	448	17	307	286	21
Washtenaw ..	373	362	11	500	585	—85	355	436	—81
Wayne	2,297	2,540	—243	8,570	8,779	—209	3,834	3,722	112
Wexford	134	135	—1	254	277	—23	91	91	—

* In many cases, which are indicated by the minus sign (—), a decrease is shown for 1893 as compared with the preceding year.

Table 10 presents certain data of interest in regard to the population of the State and the changes that have taken place from 1890 to 1894 according to the bulletins of the State census of 1894. Fuller particulars will probably be forthcoming in time for comparison with the vital statistics of the State in 1894, as contained in the next registration report. This report will be the first one since 1884 in which direct comparisons of vital statistics and population can be made without the employment of estimated populations; for 1890 the census of 1884 was employed.

It is a matter of great regret that the important results of the last United States census should be so tardily given to the public, and that even at this late date (April, 1895), important facts relating to the age and sex constitution of Michigan and other states are not accessible. It seemed likely at one time, through the employment of electric tabulating machines which were said to "secure results with great rapidity and accuracy, besides giving opportunity to make a more thorough analysis of the figures,"* that valuable data for demographic purposes would be supplied reasonably early, but such expectations have not been fulfilled by the dilatory appearance of the publications of the census bureau.

* Compendium of the Eleventh Census, Part I, Introduction, p. xvii.

Table 10.—*Character and movement of population of Michigan, by counties, 1890-94; showing the increase or decrease of the inhabitants of each county, by nativity, from 1890 to 1894, with the per cent of increase or decrease of total population.*

State and counties.	Movement of population, 1890 to 1894.				Nativity, 1894.		Increase or decrease by nativity, 1890 to 1894.*	
	Population, 1894.	Population, 1890.	Increase or decrease.*	Per cent of gain or loss.*	Native-born.	Foreign-born.	Native-born.	Foreign-born.
State	2,241,454	2,093,889	147,565	7.05	1,670,797	570,657	120,788	26,777
Alcona	5,411	5,409	2	.04	3,204	2,207	345	-343
Alger	1,884	1,288	146	11.79	822	562	165	-19
Allegan	39,185	38,961	224	.58	34,026	5,159	540	-316
Alpena	17,715	15,581	2,134	13.70	9,970	7,745	1,719	415
Antrim	12,427	10,413	2,014	19.34	9,515	2,912	1,769	245
Arenac	6,941	5,688	1,253	22.14	4,557	2,384	968	295
Baraga	4,232	3,086	1,196	39.39	2,381	1,851	625	571
Barry	23,699	23,788	-84	-.35	21,800	1,899	6	-90
Bay	61,292	56,412	4,880	8.65	40,109	21,183	5,200	-320
Benzie	8,060	5,237	2,823	53.90	6,472	1,588	2,376	447
Berrien	45,623	41,285	4,343	10.52	38,695	6,928	3,225	1,118
Branch	26,204	26,791	-587	-2.19	24,570	1,634	-516	-71
Calhoun	47,471	43,501	3,970	9.13	42,118	5,353	3,589	431
Cass	21,176	20,953	223	1.06	20,021	1,155	205	18
Charlevoix	10,931	9,666	1,245	12.85	8,451	2,480	1,165	80
Cheboygan	13,896	11,936	1,910	15.94	8,920	4,976	1,414	496
Chippewa	15,319	12,019	3,300	27.46	6,877	8,442	1,665	1,685
Clare	7,975	7,558	417	5.52	5,985	2,040	462	-45
Clinton	26,262	26,509	-247	-.93	23,534	2,728	-70	-177
Crawford	2,710	2,962	-252	-8.51	1,895	815	-72	-180
Delta	19,259	15,380	3,929	25.63	10,882	8,427	1,884	2,045
Dickinson †	14,699	-----	14,699	-----	6,685	8,064	6,685	8,064
Eaton	32,612	32,094	518	1.61	30,738	1,879	481	37
Emmet	10,381	8,756	1,625	18.56	8,534	1,847	1,271	354
Genesee	40,553	39,430	1,123	2.85	34,730	5,823	1,000	123
Gladwin	4,900	4,208	692	16.44	3,473	1,427	759	-67
Gogebie	14,068	13,166	917	6.95	6,601	7,482	747	170
G'd Traverse	17,514	13,355	4,159	31.14	13,778	3,736	3,509	650
Gratiot	28,770	28,668	102	.36	26,171	2,599	80	22
Hillsdale	30,271	30,660	-389	-1.27	23,652	1,619	-226	-163

* In many cases, which are indicated by the minus sign (—), a decrease is shown for 1894 as compared with the preceding census.

† Dickinson county was formed in 1891 from portions of Iron, Marquette and Menominee counties. For estimate of population of each, as now constituted, in 1890, see note under Table 8, preceding.

Table 10.—CONTINUED.—*Character and movement of population of Michigan.*

Counties.	Movement of population, 1890 to 1894.				Nativity, 1894.		Increase or decrease by nativity, 1890 to 1894.*	
	Popula- tion, 1894.	Popula- tion, 1890.	Increase or de- crease. *	Per cent of gain or loss.*	Native- born.	Foreign- born.	Native- born.	Foreign- born.
Houghton	44,174	35,389	8,785	24.82	24,244	19,930	5,673	3,112
Huron	32,249	28,545	3,704	12.98	19,157	13,092	2,981	723
Ingham	39,689	37,666	2,023	5.37	34,796	4,893	1,606	417
Ionia	34,817	32,801	2,016	6.15	30,963	3,854	1,823	198
Iosco	12,339	15,224	-2,885	-18.95	7,496	4,843	-1,061	-1,824
Iron †	5,293	4,432	861	19.43	2,865	2,428	789	122
Isabella	21,439	18,784	2,655	14.13	17,293	4,146	2,212	443
Isle Royal ‡		135	-135	-100.00			-36	-99
Jackson	46,527	45,031	1,496	3.32	39,915	6,612	813	653
Kalamazoo	42,055	39,273	2,782	7.03	34,876	7,179	2,212	570
Kalkaska	5,637	5,160	477	9.24	4,665	972	522	-45
Kent	121,919	109,922	11,997	10.91	88,586	33,333	8,603	3,394
Keweenaw	2,304	2,894	-90	-3.11	1,434	1,370	-134	44
Lake	5,895	6,505	-610	-9.38	4,221	1,674	-376	-234
Lapeer	28,874	29,213	-339	-1.16	22,246	6,628	26	-365
Leelanau	9,395	7,944	1,451	18.27	6,998	2,397	1,159	292
Lenawee	48,541	48,448	93	.19	43,399	5,142	354	-261
Livingston	20,435	20,858	-423	-2.03	18,065	2,370	-231	-142
Luce	2,348	2,455	-107	-4.36	1,054	1,294	164	-271
Mackinac	7,237	7,830	-593	-7.57	4,638	2,599	-401	-192
Macomb	32,382	31,813	569	1.79	24,809	7,573	721	-152
Manistee	26,112	24,230	1,882	7.77	16,310	9,802	2,077	-195
Manitou	917	860	57	6.63	671	246	71	-14
Marquette†	38,004	39,521	-1,517	-3.84	20,482	17,522	1,732	-3,249
Mason	18,418	16,335	2,083	12.41	12,768	5,650	1,732	301
Mecosta	20,730	19,697	1,033	5.24	16,707	4,023	1,404	-371
Menominee†	23,786	33,639	-9,903	-29.44	13,498	10,238	-2,633	-7,270
Midland	19,223	10,657	2,566	24.08	10,002	3,221	1,997	569
Missaukee	6,956	5,048	1,908	37.80	4,625	2,331	1,443	465
Monroe	33,179	32,337	842	2.60	28,873	4,306	962	-120
Montcalm	34,155	32,637	1,518	4.65	28,753	5,402	1,451	67
Montmorency	2,435	1,487	948	63.75	1,539	896	632	316
Muskegon	37,323	40,013	-2,690	-6.72	25,450	11,873	-828	-1,862

* In many cases, which are indicated by the minus sign (-), a decrease is shown for 1894 as compared with the preceding census.

† Dickinson county was formed in 1891 from portions of Iron, Marquette and Menominee counties. For estimate of population of each, as now constituted, in 1890, see note under Table 8, preceding.

‡ No enumeration of population of Isle Royal by State census of 1894.

Table 10.—CONCLUDED.—Character and movement of population of Michigan.

Counties.	Movement of population, 1890 to 1894.				Nativity, 1894.		Increase or decrease by nativity, 1890 to 1894.*	
	Population, 1894.	Population, 1890.	Increase or decrease.*	Per cent of gain or loss.*	Native-born.	Foreign-born.	Native-born.	Foreign-born.
Newaygo	19,124	20,476	-1,352	-6.60	15,824	3,300	-565	-787
Oakland	42,668	41,245	1,423	3.45	35,588	7,080	1,075	348
Oceana	16,567	15,698	869	5.73	14,016	2,581	893	6
Ogemaw	5,636	5,583	53	.95	3,803	1,833	352	-299
Ontonagon	6,873	3,756	3,117	83.00	4,172	2,701	1,749	1,368
Osceola	16,475	14,630	1,845	12.61	12,622	3,853	1,676	169
Oscoda	1,804	1,904	-100	-5.25	1,378	426	-30	-70
Otsego	4,794	4,272	522	12.22	3,329	1,465	408	114
Ottawa	39,075	35,358	3,717	10.51	27,766	11,309	2,849	868
Presque Isle	5,910	4,687	1,223	26.09	3,544	2,366	690	533
Rosecommon	1,657	2,033	-376	-18.49	1,068	559	-158	-218
Saginaw	81,841	82,273	-432	-.53	57,516	24,325	789	-1,171
Sanilac	33,944	32,589	1,355	4.16	20,266	13,678	1,608	-253
Schoolcraft	7,127	5,818	1,309	22.50	3,850	3,277	848	461
Shiawassee	32,827	30,952	1,875	6.06	28,223	4,604	1,669	206
St. Clair	54,315	52,105	2,210	4.24	35,722	18,593	2,023	187
St. Joseph	25,087	25,356	-269	-1.06	22,717	2,370	-173	-96
Tuscola	34,411	32,508	1,903	5.85	26,011	8,400	1,518	385
Van Buren	31,059	30,541	518	1.70	28,881	2,178	513	5
Washtenaw	48,491	42,210	6,281	14.88	35,717	7,774	1,246	35
Wayne	292,495	257,114	35,381	13.76	182,466	110,029	21,389	14,012
Wexford	14,047	11,278	2,769	24.55	10,879	3,168	2,235	534

* In many cases, which are indicated by the minus sign (-), a decrease is shown for 1894 as compared with the preceding census.

The following statements in regard to the relative increase of the native-born and foreign-born inhabitants of the State, as shown by comparison of recent censuses, are taken from the State census bulletin:

POPULATION OF STATE, AS NATIVE AND FOREIGN-BORN.

The number of native inhabitants in the State June 1, 1894, was 1,670,797 or 74.54 per cent, and of foreign-born inhabitants 570,657, or 25.46 per cent of the total population. In 1870 the foreign-born inhabitants were 22.63 per cent; in 1880, 23.73 per cent; in 1884, 26.40 per cent, and in 1890, 25.97 per cent of the total population. The proportion of the population foreign-born is now nearly one per cent less than in 1884, and one-half of one per cent less than in 1890. To each 100,000 native inhabitants there were 29,257 foreign-born inhabitants in 1870; 31,120 in 1880; 35,869 in 1884; 35,089 in 1890; and 34,156 in 1894. In each 100,000 population there were 77,370 native and 22,630 foreign-born in 1870; 76,266 native and 23,734 foreign-born in 1880; 73,600 native and 26,400 foreign-born in 1884; 74,025 native and 25,975 foreign-born in 1890, and 74,540 native and 25,460 foreign-born in 1894.

The increase and per cent of increase of native and of foreign-born inhabitants in each census period since 1880 has been as follows:

NATIVE-BORN.

Increase 1880 to 1884, 109,210; per cent of increase, 8.75.
Increase 1884 to 1890, 192,370; per cent of increase, 14.17.
Increase 1890 to 1894, 120,788; per cent of increase, 7.79.

FOREIGN-BORN.

Increase 1880 to 1884, 98,460; per cent of increase, 25.34.
Increase 1884 to 1890, 56,912; per cent of increase, 11.69.
Increase 1890 to 1894, 26,777; per cent of increase, 4.92.

In the period 1880 to 1884 the native inhabitants increased 109,210, and the foreign-born 98,460; in the period 1884 to 1890 the native inhabitants increased 192,370, and the foreign-born 56,912, and in the period 1890 to 1894 the native inhabitants increased 120,788, and the foreign-born 26,777. Referring to the rate of increase, in the first named period the native inhabitants increased 8.75 per cent, and the foreign-born 25.34 per cent; in the second period the native increased 14.17 per cent, and the foreign-born 11.69 per cent; and in the third period the native increased 7.79 per cent, and the foreign-born 4.92 per cent.

In the four years 1880 to 1884 the actual increase of the foreign-born was only 10,750 less than of the native, and the rate of increase was nearly three times that of the native, but in the four years 1890 to 1894, the actual increase of the foreign-born was 94,011 less, and the rate of increase not quite two-thirds that of the natives. The increase of the foreign-born from 1890 to 1894 was but 27 per cent of the increase from 1880 to 1884, and the rate of increase from 1890 to 1894 was less than one-fifth the rate from 1880 to 1884.

In the six years from 1884 to 1890 the increase of foreign population was 41,548 less than the increase in the four years from 1880 to 1884.

POPULATION OF INCORPORATED CITIES, AS NATIVE AND FOREIGN-BORN.

Of the total population of the incorporated cities in the State, 821,032, 551,365 or 67.16 per cent are native, and 269,667 or 32.84 per cent foreign-born. The proportion of native and foreign-born inhabitants in the incorporated cities of the State at the several censuses has been as follows:

1880, native, 65.86 per cent; foreign-born, 34.14 per cent.
1884, native, 64.42 per cent; foreign-born, 35.58 per cent.
1890, native, 65.69 per cent; foreign-born, 34.31 per cent.
1894, native, 67.16 per cent; foreign-born, 32.84 per cent.

The native inhabitants of the sixty-one cities in the State in 1890 have increased 64,906 or 13.89 per cent, and the foreign-born 19,955, or 8.17 per cent. The increase outside of these cities has been, of native inhabitants 55,863, or 5.16 per cent, and of foreign-born 6,841, or 2.28 per cent.

The native inhabitants of the forty-nine cities in the State in 1884 have increased 174,735, or 53.76 per cent, and the foreign-born, 62,116 or 34.59 per cent. The increase outside of these cities has been of native inhabitants, 138,404, or 13.40 per cent, and of foreign-born 21,592, or 7.02 per cent.

The following table shows the population as native and foreign-born in four sections of the State:

Sections.	Total.	Outside of cities.		In cities.	
		Native.	Foreign.	Native.	Foreign.
Southern four tiers of counties	1,342,496	670,808	110,391	391,679	169,618
Central counties (5th and 6th tiers)	435,098	231,873	77,590	85,402	40,233
Northern counties	256,371	148,848	55,954	31,136	20,438
Upper peninsula	207,489	67,908	57,055	43,148	39,378
Total	2,241,454	1,119,432	300,990	551,365	269,667

The number of inhabitants in the southern four tiers of counties is 1,342,496, or 59.89 per cent of the total population of the State. Of the total population of this section 1,062,487, or 79.14 per cent are native, and 280,009, or 20.86 per cent foreign-born. Of the native inhabitants 670,808, or 63.14 per cent live outside of incorporated cities, and 391,679, or 36.86 per cent live in incorporated cities. Of the foreign-born, 110,391, or 39.42 per cent live outside of incorporated cities and 169,618 or 60.58 per cent live in incorporated cities. Approximately more than five eighths of the native inhabitants in this section live in the country, and less than three eighths in the cities; while of the foreign-born nearly five eighths live in the cities and three eighths in the country.

The number of inhabitants in the central counties (fifth and sixth tiers) is 435,098, or 19.41 per cent of the total population of the State. Of the total population of this section 317,275, or 72.92 per cent are native, and 117,823, or 27.08 per cent foreign-born. Of the native inhabitants 231,873, or 73.08 per cent live outside of incorporated cities, and 85,402, or 26.92 per cent live in incorporated cities. Of the foreign-born 77,590 or 65.85 per cent live outside of incorporated cities, and 40,233, or 34.15 per cent, live in incorporated cities. Approximately three fourths of the native inhabitants of this section live in the country and one fourth in the cities, while of the foreign-born two thirds live in the country and one third in the cities.

The number of inhabitants in the northern counties (remaining counties in the lower peninsula) is 256,371, or 11.44 per cent of the total population of the State. Of the total population of this section 179,979, or 70.20 per cent are native, and 76,392, or 29.80 per cent foreign-born. Of the native inhabitants 148,843, or 82.70 per cent live outside of incorporated cities, and 31,136, or 17.30 per cent live in incorporated cities. Of the foreign-born, 55,954, or 73.25 per cent live outside of incorporated cities, and 20,438, or 26.75 per cent live in incorporated cities.

The number of inhabitants in the upper peninsula is 207,489, or 9.26 per cent of the total population of the State. Of the total population of this section 111,056, or 53.52 per cent are native, and 96,433, or 46.48 per cent foreign-born. Of the native inhabitants 67,908, or 61.15 per cent live outside of incorporated cities, and 43,148, or 38.85 per cent live in incorporated cities. Of the foreign-born 57,055, or 59.17 per cent live outside of incorporated cities, and 39,378, or 40.83 per cent live in incorporated cities.

Excluding from consideration the counties of Dickinson, Iron, Marquette and Menominee, in which alterations in area consequent on the formation of Dickinson county in 1891 from the latter three render direct comparisons impossible, and also excluding Isle Royal, an unorganized county having only 135 inhabitants in 1890 and of which no enumeration was made in 1894, we have left 80 counties constituting the State, of which number 21 showed a decrease of population from 1890 to 1894. The largest per cents of loss were in the sparsely settled counties. The counties showing the largest per cents of gain in the four-year period were as follows: Baraga, 39.39; Benzie 53.90; Chippewa, 27.46; Delta, 25.63; Grand Traverse, 31.14; Houghton, 24.82; Midland, 24.08; Missaukee, 37.80; Montmorency, 63.75; Ontonagon, 83.00; Presque Isle, 26.09; Wexford, 24.55. It will be observed that many of these counties with high rates of increase are small ones in which the addition of a small number of persons is sufficient to cause the large per cents of gain noted.

The disproportionate amounts of gain of the native-born and foreign-born inhabitants of the State from 1890 to 1894, which have already been referred to for the State as a whole, may be studied in detail for the individual counties in Table 10. Fifteen counties gave positive losses of native-born population from 1890 to 1894, and thirty-two counties showed losses of foreign-born population for the same time.

PART II.—BIRTHS IN MICHIGAN DURING THE YEAR 1893.

The total number of births reported for the State in 1893 is somewhat larger than the number returned for the preceding year. The numbers registered for the two years are 47,722 and 46,221, respectively, an excess of 1,501 births for the latter year. Comparisons with all of the previous years of registration may be found in Part I (Table 4), in which table also appear statements of birth-rates based upon such returns and calculated to the estimated population of each year. The birth-rate for the year 1893; which is 21.6 per 1,000 population, is higher than that for 1892 (21.3 per 1,000), but is much lower than the rates for the years 1887-91, inclusive. The rates for these years, as fully shown in the registration report for 1892, are entirely vitiated by the addition of large numbers of fraudulent entries from the city of Detroit, so that no comparisons and statistical conclusions are possible.

Besides the irregularities in the returns of births in the years noted, it must be remembered that the returns of births in Michigan have always been very imperfect, even when honestly collected. In the reports of previous years it has been customary to make allowance for such deficiencies by adding a variable percentage of births as "corrections" for omissions in enumerating. Such "corrections" were merely estimations, and were objectionable from the fact that different amounts were added for each year, while there was no evidence to show that the accuracy of enumeration had varied. It has seemed preferable to submit the statement that the returns are known to be inaccurate, and that the addition of at least sixty per cent of the number returned would probably be well within the limits of the number that actually occurred. Such an approximation has no statistical value, and it is unnecessary to dwell upon it further than to say that we have no definite knowledge of the true number of births that occur annually in this State, and that all the data given in these reports relative to births are based upon returns very much less than the truth.

The birth-rates for individual counties are presented and discussed in Part I in connection with the returns of marriages and deaths (Table 8). In Table 9 comparisons are given for each county of the numbers returned for 1892 and 1893 of all classes of returns, and thus any marked increase or decrease may be readily noted. Reference should accordingly be made to these tables and the accompanying text for further information under these heads.

The most striking feature of the return of births for the year is the fact of the very slight increase of the number of children born of foreign-born parents. While the total number of births returned for 1893 exceeded the number returned for 1892 by 1,501, this excess is almost entirely made up of the increase in the number of children born to native-born parents. Thus, taking parents both of foreign nativity, there were 18,344

children born to them in 1892, and 18,364 in 1893, an increase of only 20. In the same time the number of children born of parents both native-born increased from 18,368 to 19,616, or 1,248. These changes doubtless depend upon the business depression that has affected the State, and which has shown its most disastrous effects among the large foreign-born population of the upper peninsula. The marriage-rate has shown a large diminution also in the iron-mining counties of that region.

SUMMARY OF THE REGISTRATION OF BIRTHS FOR THE YEAR 1893.

The following statements include the more important features of the registration of births in Michigan for the year 1893:

Total number of births returned,	47,722
Birth-rate per 1,000 estimated population,	21.6
(Actual number of births that occurred, estimated at,	76,355
Actual birth-rate per 1,000, estimated at,	34.7)

Exclusive of still-births, there were:

Children born alive,	46,703
Children born alive per 1,000 population,	21.2

Compared with the previous year, we have:

Increase of births returned for 1893 (47,722) over the number returned for 1892 (46,221),	1,501
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The following is the distribution of the births returned according to sex:

Males,	24,734
Females,	22,909
Sex unknown or unspecified (49 of these still-born),	79

The parent-nativity of children born in 1893, exclusive of births to parents of different nativities, may be stated:

Born of parents both of native birth,	19,616
Born of parents both of foreign birth,	18,364

Classified by color, there were:

White,	47,412
Colored (black, 127; mulatto, 54; Indian, 120),	301
Color unknown or unspecified,	9

Of the 47,722 children born in 1893 according to the returns, there were:

Still-births (males, 572; females, 398; unknown, 49),	1,019
Still-birth-rate per 1,000 population,	0.5
Still-births per 1,000 births,	21.4

Plural births are of special interest. Besides three sets of triplets, there were reported:

Twin children (males, 490; females, 486; unknown, 10),	986
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The reported rate of illegitimacy is low for Michigan. In 1893 there were returned:

Illegitimate births (males, 278; females, 227),	505
Illegitimate births per 1,000 births,	10.6

The facts relating to the distribution of births in Michigan through the year, and also through the different counties of the State, together with comparisons with preceding years, are shown in the following tables. Analysis is made chiefly with reference to sex, color and nativity of parents.

Synopsis of tables relating to births.

Table.	Births in Michigan, 1893.
<i>A.—General discussion of births.</i>	
11.	Births by quarters, 1893, compared with 1891-92, and with the average for ten years, 1883-92.
12.	Births by months, 1893, compared with 1891-92, and with the average for ten years, 1883-92. The months are arranged in order of the number of births registered in each.
13.	Births, by sex and months, in each county of the State in 1893; also number of births of males to 100 births of females for each county.
14.	By parent-nativity and sex, the number and per cent of children born in Michigan, 1893.
15.	Comparison of parent-nativity of children born in Michigan in 1893 with 1891-92, and with the average of ten years, 1883-92.
16.	Comparison of parent-nativity of children born in Michigan in 1891, 1892 and 1893, with averages of the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.
17.	Births, by parent-nativity and sex, for each county of the State in 1892.
<i>B.—Still-births, plural and illegitimate births.</i>	
18.	Number of pairs of twins, still-births and illegitimate children born in each county of the State in 1893.
19.	Ratios of still-born, twin and illegitimate children to total births, 1893; compared with 1890-92, and with the average for ten years, 1883-92.
20.	Comparison of the number of pairs of twins and cases of triplets returned in Michigan for ten years, 1884-93, and ratios of these events to total births in each year.
21.	Months of birth, by sex, of still-born, twin and illegitimate children, 1893.
22.	Parent-nativity, by sex, of still-born, twin and illegitimate children, 1893.
23.	Ratios of the sexes (number of males to 100 females) of children born alive, still-births, twins and illegitimates in 1893, compared with 1892 and with the average of ten years, 1883-92.
24.	Comparison of the parent-nativity of plural births in Michigan for ten years, 1884-93.
25.	Comparison of the number and rate per 1,000 births of illegitimate children born in Michigan for ten years, 1884-93, and also the parent-nativities of the mothers of illegitimate children for the same time.
26.	List of townships reporting that no births occurred in 1893.
27.	List of townships that failed to make returns of births for 1893.

BIRTHS BY MONTHS AND QUARTERS.

Tables 11 and 12, showing the distribution of the births returned through the months and quarters of the year, are presented with considerable reluctance by the compiler. The ratios stated for the different months and quarters do not at all represent the true relations of the births that actually occurred in those periods of time. It is well known that by the present system of registration in this State a large number of births entirely fail of record each year. The largest amount of deficiency in this respect is found among the first months of the year, these months being most remote from the date of registration. The returns for December and the latter months of the year are much more perfect, though even with these at least four months elapse between the occurrence of the births and the time of recording them. For this reason it will be observed that if the same number of births actually occurred in each month of the year, the order of the months, *as returned*, would be in the reverse order of their procession in the year. That the latter months predominate in the years compared and also in the ten-year average, does not appear especially significant in view of the large margin of error involved in the data presented.

VITAL STATISTICS OF MICHIGAN, 1893.

Table 11.—*Births, by quarters of the year, for the years 1891-93, and the average for ten years, 1883-92. (Still-births included.)*

Quarter.	1891.		1892.		1893.		Average for 10 years, 1883-92.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Year	50,812	100.0	46,221	100.0	47,722	100.0	45,823	100.0
Quarter ending Mar. 31..	11,508	22.6	10,286	22.3	10,806	22.6	10,184	22.2
Quarter ending June 30..	12,781	25.2	11,586	25.1	11,759	24.6	11,578	25.3
Quarter ending Sept. 30..	13,641	26.8	12,185	26.4	12,755	26.7	12,263	26.8
Quarter ending Dec. 31 ..	12,829	25.2	12,115	26.2	12,344	25.9	11,750	25.6
Unknown month.....	53	.1	49	.1	53	.1	48	.1
Average *.....	12,708	25.0	11,555	25.0	11,931	25.0	11,456	25.0

* The number of births in "unknown month" is included in the average.

Table 12.—*Births during the years 1891-93, according to the returns, and the average for ten years, 1883-92, showing number and percentage by months, in order of greatest first. (Still-births included.)*

Order.	1891.			1892.			1893.			Average for 10 years, 1883-92.		
	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.
	Year	50,812	100.0	Year	46,221	100.0	Year	47,722	100.0	Year	45,823	100.0
1	Aug.	4,702	9.3	Dec.	4,344	9.4	Aug.	4,351	9.1	Aug.	4,197	9.2
2	Sept.	4,646	9.1	Aug.	4,168	9.0	Dec.	4,263	8.9	Sept.	4,133	9.0
3	May	4,465	8.8	Sept.	4,088	8.8	Sept.	4,246	8.9	Dec.	4,092	8.9
4	Dec.	4,391	8.6	May	3,977	8.6	Oct.	4,165	8.7	May	3,980	8.7
5	March ..	4,345	8.6	July	3,929	8.5	July	4,158	8.7	July	3,933	8.6
6	Oct.	4,340	8.5	April ...	3,928	8.5	March ..	4,069	8.5	Oct.	3,929	8.6
7	July	4,298	8.4	Oct.	3,918	8.5	April ...	3,984	8.2	April ...	3,862	8.4
8	April ...	4,238	8.3	Nov.	3,853	8.3	May	3,924	8.2	March ..	3,883	8.4
9	Nov.	4,098	8.1	March ..	3,745	8.1	Nov.	3,916	8.2	June	3,736	8.2
10	June	4,078	8.0	June	3,681	8.0	June	3,901	8.2	Nov.	3,729	8.1
11	Jan.	3,629	7.1	Feb.	3,315	7.2	Feb.	3,391	7.1	Feb.	3,180	6.9
12	Feb.	3,584	7.0	Jan.	3,226	7.0	Jan.	3,346	7.0	Jan.	3,171	6.9
	Unk.	53	.1	Unk.	49	.1	Unk.	53	.1	Unk.	48	.1
	Av. *	4,234	8.3	Av. *	3,852	8.3	Av. *	3,977	8.3	Av. *	3,819	8.3

* Including births in unknown month.

Table 13.—*Exhibiting, by counties and by sex, the number of births returned for the year, and for each month of the year, ending December 31, 1893; also the number of males to 100 females. (Still-births included.)*

State and counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
State	108	Total	47,722	3346	3391	4069	3934	3924	3901	4158	4351	4246	4165	3916	4263	58
		Males	24,784	1713	1767	2169	2037	2027	2041	2188	2233	2197	2105	2024	2204	29
		Females	22,909	1626	1618	1894	1893	1893	1854	1963	2113	2046	2051	1885	2050	23
		Unknown ..	79	7	6	6	4	4	6	7	5	3	9	7	9	6
Alcona	119	Total	105	9	7	9	7	19	11	10	9	5	8	9	2	---
		Males	57	5	5	5	3	10	8	5	5	2	2	6	1	---
		Females	48	4	2	4	4	9	3	5	4	3	6	3	1	---
Alger	157	Total	18	---	2	2	3	3	1	1	2	2	---	1	1	---
		Males	11	---	2	2	1	2	1	1	1	1	---	---	---	---
		Females	7	---	---	---	2	1	---	---	1	1	---	1	1	---
Allegan	98	Total	743	50	47	65	75	66	64	72	64	54	75	59	51	1
		Males	366	21	21	31	43	30	30	43	31	23	38	31	23	1
		Females	374	29	26	34	31	36	34	29	33	30	37	27	28	---
		Unknown ..	3	---	---	---	1	---	---	---	---	1	---	1	---	---
Alpena	120	Total	455	45	35	35	33	38	34	34	38	42	34	39	44	3
		Males	248	21	17	18	16	23	21	21	22	20	19	25	22	3
		Females	206	25	18	17	17	15	13	13	16	22	15	14	21	---
		Unknown ..	1	---	---	---	---	---	---	---	---	---	---	---	1	---
Antrim	87	Total	209	10	12	16	18	27	11	27	16	14	22	12	24	---
		Males	97	6	5	8	6	11	5	13	7	8	10	5	13	---
		Females	112	4	7	8	12	16	6	14	9	6	12	7	11	---
Arenac	103	Total	151	17	20	13	11	11	8	7	9	22	15	10	7	1
		Males	76	5	9	7	4	3	3	5	7	14	10	4	4	1
		Females	74	12	11	6	7	7	5	2	2	8	5	6	3	---
		Unknown ..	1	---	---	---	---	1	---	---	---	---	---	---	---	---
Baraga	98	Total	146	16	7	16	16	10	5	12	18	18	7	12	9	---
		Males	72	8	4	8	11	5	2	4	14	4	5	5	2	---
		Females	73	8	3	8	5	4	3	8	4	14	2	7	7	---
		Unknown ..	1	---	---	---	---	1	---	---	---	---	---	---	---	---
Barry	98	Total	370	22	25	27	31	41	36	34	35	35	26	24	34	---
		Males	183	12	8	12	19	24	21	21	14	20	8	10	14	---
		Females	187	10	17	15	12	17	15	13	21	15	18	14	20	---
Bay	112	Total	1,625	124	113	151	144	130	119	137	143	148	153	115	143	---
		Males	859	71	57	84	78	66	62	73	75	75	83	56	79	---
		Females	765	53	56	67	66	63	57	64	73	73	70	59	64	---
		Unknown ..	1	---	---	---	---	1	---	---	---	---	---	---	---	---

Table 13.—CONTINUED.—*Births by counties, months, and sex.*

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Benzie.....	118	Total	148	5	12	14	14	23	13	14	17	9	9	6	12	---
		Males.....	80	3	6	7	9	15	9	7	8	5	3	3	5	---
		Females.....	68	2	6	7	5	8	4	7	9	4	6	3	7	---
Berrien.....	117	Total	681	48	45	58	60	62	57	58	60	53	60	53	68	4
		Males.....	364	27	29	34	28	34	33	23	34	28	34	26	33	1
		Females.....	312	20	16	24	32	28	24	35	25	25	25	27	28	3
		Unknown	5	1	---	---	---	---	---	---	1	---	1	---	2	---
Branch.....	99	Total	357	31	26	22	33	20	36	31	34	39	30	34	21	---
		Males.....	178	17	10	13	17	9	20	13	16	15	14	22	12	---
		Females.....	179	14	16	9	16	11	16	18	18	24	16	12	9	---
Calhoun.....	91	Total	661	48	48	49	47	57	51	49	62	61	73	47	67	2
		Males.....	315	21	23	30	23	29	30	20	30	30	32	21	26	---
		Females.....	345	27	25	19	24	28	21	29	32	31	41	26	41	1
		Unknown	1	---	---	---	---	---	---	---	---	---	---	---	---	1
Cass.....	108	Total	298	15	27	22	18	24	21	28	31	31	26	21	28	1
		Males.....	152	8	12	14	11	12	15	9	15	16	13	9	17	1
		Females.....	141	7	15	8	7	12	6	19	16	15	13	12	11	---
Charlevoix.....	91	Total	191	12	11	17	18	16	23	10	17	18	17	18	14	---
		Males.....	91	5	7	10	6	8	9	3	8	11	12	8	4	---
		Females.....	100	7	4	7	12	8	14	7	9	7	5	10	10	---
Cheboygan.....	108	Total	262	18	16	17	23	24	19	24	24	24	26	23	24	---
		Males.....	136	7	9	10	14	11	13	10	14	12	11	12	13	---
		Females.....	126	11	7	7	9	13	6	14	10	12	15	11	11	---
Chippewa.....	132	Total	272	11	17	29	19	35	27	25	23	20	14	21	29	2
		Males.....	155	4	11	19	7	18	15	13	14	14	11	10	17	2
		Females.....	117	7	6	10	12	17	12	12	9	6	3	11	12	---
Clare.....	90	Total	167	7	13	20	18	13	16	21	13	15	14	9	7	1
		Males.....	79	2	7	8	7	7	9	9	6	11	7	5	1	---
		Females.....	88	5	6	12	11	6	7	12	7	4	7	4	6	1
Clinton.....	110	Total	439	25	20	34	30	36	37	37	38	36	46	37	60	3
		Males.....	230	10	8	20	9	18	19	21	20	16	25	23	39	2
		Females.....	209	15	12	14	21	18	18	16	18	20	21	14	21	1
Crawford.....	111	Total	38	4	2	7	1	---	4	5	3	2	1	4	5	---
		Males.....	20	3	---	4	1	---	1	4	1	1	---	2	3	---
		Females.....	18	1	2	3	---	---	3	1	2	1	1	2	2	---

Table 13.—CONTINUED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.											
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December. Unknown.
Delta	91	Total	444	37	40	43	36	35	36	45	46	32	32	31	31
		Males	211	17	14	20	18	22	13	22	22	19	12	19	13
		Females	233	20	26	23	18	13	23	23	24	13	20	12	18
Dickinson	122	Total	590	43	43	47	45	38	43	57	45	45	59	63	62
		Males	324	32	23	22	21	21	27	31	24	27	34	30	32
		Females	266	11	20	25	24	17	16	26	21	18	25	33	30
Eaton	116	Total	409	32	14	35	38	37	39	36	49	31	37	30	31
		Males	219	16	7	23	16	19	26	18	24	17	20	17	16
		Females	188	16	7	12	22	18	13	17	25	14	17	13	14
		Unknown	2							1					1
Emmet	87	Total	215	20	7	9	17	31	14	16	23	21	19	20	18
		Males	100	12	2	6	7	10	8	8	9	9	9	9	11
		Females	115	8	5	3	10	21	6	8	14	12	10	11	7
Genesee	108	Total	667	41	43	46	62	53	51	49	85	65	55	68	49
		Males	346	20	24	22	32	33	29	30	39	32	21	34	30
		Females	321	21	19	24	30	20	22	19	46	33	34	34	19
Gladwin	100	Total	72	1	4	9	7	8	5	7	9	4	8	4	6
		Males	36	1	2	5	2	5	2	4	4	2	3	3	3
		Females	36		2	4	5	3	3	3	5	2	5	1	3
Gogebic	114	Total	709	44	49	63	74	67	47	74	73	65	53	47	51
		Males	377	24	29	36	40	35	26	37	33	37	31	22	26
		Females	331	20	20	27	34	32	21	37	40	28	21	25	25
		Unknown	1										1		
Grand Traverse	102	Total	279	24	22	17	24	18	23	23	27	26	27	23	25
		Males	141	12	11	11	10	9	9	11	14	10	15	16	13
		Females	138	12	11	6	14	9	14	12	13	16	12	7	12
Gratiot	100	Total	499	18	23	38	55	47	39	52	50	39	57	40	41
		Males	250	10	12	19	29	22	20	26	24	21	29	18	20
		Females	249	8	11	19	26	25	19	26	26	18	28	22	21
Hillsdale	112	Total	255	13	10	27	21	22	25	22	21	23	36	20	15
		Males	134	9	8	12	9	15	11	12	13	15	14	12	4
		Females	120	4	1	15	12	7	14	10	8	8	22	8	11
		Unknown	1		1										
Houghton	97	Total	1,720	134	126	154	127	126	127	159	182	135	137	147	166
		Males	849	67	60	79	61	63	72	87	90	67	64	76	68
		Females	871	67	66	75	66	58	55	72	102	68	73	71	98

Table 13.—CONTINUED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year. 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Huron.....	109	Total	860	64	61	74	79	88	76	76	56	85	73	57	70	1
		Males	446	33	33	43	49	40	33	36	31	42	38	28	39	1
		Females	411	30	28	31	30	48	43	39	25	43	35	29	30	—
		Unknown	3	1	—	—	—	—	—	1	—	—	—	—	1	—
Ingham.....	106	Total	605	35	35	37	46	36	61	55	67	63	71	54	45	—
		Males	310	16	21	17	19	22	34	27	32	30	35	31	26	—
		Females	292	19	14	20	25	14	27	28	35	32	36	23	19	—
		Unknown	3	—	—	—	2	—	—	—	1	—	—	—	—	—
Ionia.....	121	Total	475	33	33	53	43	45	37	37	47	42	31	28	44	1
		Males	259	18	20	30	24	28	15	18	26	25	14	12	29	—
		Females	214	15	13	23	19	17	22	19	21	18	17	16	14	—
		Unknown	2	—	—	—	—	—	—	—	—	—	—	—	1	1
Iosco.....	105	Total	320	28	11	25	23	28	28	29	29	23	23	36	35	2
		Males	164	12	5	13	15	8	10	16	16	12	8	20	27	2
		Females	156	16	6	12	8	20	18	13	13	11	15	16	8	—
		Unknown	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Iron.....	114	Total	144	11	12	11	16	14	11	12	10	15	11	10	9	2
		Males	75	8	8	2	10	7	3	5	5	9	5	4	7	2
		Females	66	3	4	7	6	7	8	7	5	6	6	5	2	—
		Unknown	3	—	—	2	—	—	—	—	—	—	—	1	—	—
Isabella.....	102	Total	451	21	19	51	26	38	49	43	45	42	45	41	31	—
		Males	228	7	10	33	7	19	26	22	27	18	25	20	14	—
		Females	223	14	9	18	19	19	23	21	18	24	20	21	17	—
		Unknown	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jackson.....	114	Total	714	52	50	48	38	61	59	66	57	68	81	64	70	—
		Males	379	26	29	23	17	29	31	30	33	36	47	39	39	—
		Females	333	26	21	25	21	32	28	36	24	32	32	25	31	—
		Unknown	2	—	—	—	—	—	—	—	—	—	2	—	—	—
Kalamazoo.....	116	Total	787	48	70	60	58	64	76	61	72	77	69	67	65	—
		Males	421	36	32	32	34	30	45	33	36	47	34	28	34	—
		Females	364	12	38	28	24	34	31	27	35	30	35	39	31	—
		Unknown	2	—	—	—	—	—	—	1	1	—	—	—	—	—
Kalkaska.....	100	Total	96	5	7	6	4	10	7	8	12	10	15	5	7	—
		Males	48	4	5	4	1	2	5	5	4	5	5	3	5	—
		Females	48	1	2	2	3	8	2	3	8	5	10	2	2	—

BIRTHS BY COUNTIES, MONTHS AND SEX.

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Table 13.—CONTINUED.—Births by counties, months and sex.

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Kent.....	110	Total	2,511	177	168	202	195	206	205	216	226	240	223	217	236	.....
		Males	1,314	91	90	110	111	113	101	117	116	130	103	112	120	.....
		Females.....	1,194	86	78	90	84	93	104	98	110	110	120	105	116	.....
		Unknown ..	3	.....	.....	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Keweenaw.....	131	Total	104	6	11	15	9	9	13	9	7	7	7	1	10	.....
		Males	59	5	4	9	1	5	11	6	4	2	6	1	5	.....
		Females.....	45	1	7	6	8	4	2	3	3	5	1	.....	5	.....
Lake	96	Total	94	7	8	10	11	13	6	2	6	10	6	6	9	.....
		Males	46	5	4	4	7	8	2	2	3	4	2	1	4	.....
		Females.....	48	2	4	6	4	5	4	.....	3	6	4	5	5	.....
Lapeer	107	Total	490	29	28	47	41	41	48	47	40	37	53	36	43	.....
		Males	253	11	14	22	25	18	29	21	24	16	28	22	23	.....
		Females.....	237	18	14	25	16	23	19	26	16	21	25	14	20	.....
Leelanau	123	Total	218	9	13	16	20	21	21	13	26	12	23	18	19	.....
		Males	122	8	8	10	9	4	18	11	14	6	15	8	11	.....
		Females.....	95	1	5	6	11	17	3	8	12	6	8	10	8	.....
		Unknown ..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lenawee	112	Total	656	46	46	51	64	63	53	57	68	46	60	57	44	.....
		Males	346	26	26	31	35	40	25	28	32	19	34	31	19	.....
		Females.....	309	20	20	20	29	23	28	29	35	27	26	26	25	.....
		Unknown ..	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Livingston	115	Total	310	21	16	24	12	23	26	30	26	29	34	32	35	.....
		Males	165	11	10	13	7	10	12	16	14	16	20	15	21	.....
		Females.....	144	10	6	11	5	13	14	14	12	13	14	17	14	.....
		Unknown ..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Luce.....	130	Total	62	3	1	8	3	3	7	4	4	7	4	7	7	.....
		Males	35	.....	.....	5	2	2	2	1	3	5	3	5	4	.....
		Females.....	27	3	1	3	1	1	5	3	1	2	1	2	3	.....
Mackinac	95	Total	115	10	5	10	15	12	10	7	12	8	7	5	13	.....
		Males	56	7	2	4	10	7	2	4	8	4	.....	1	7	.....
		Females.....	59	3	3	6	5	5	8	3	4	4	7	4	6	.....
Macomb.....	117	Total	591	37	44	59	46	49	53	57	46	66	51	38	45	.....
		Males	319	11	26	23	27	27	34	32	22	44	31	17	25	.....
		Females.....	271	26	18	36	19	22	18	25	24	22	20	21	20	.....
		Unknown ..	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....

Table 13.—CONTINUED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Manistee	94	Total	741	43	61	60	67	49	68	74	66	68	66	57	67	---
		Males	358	24	31	31	33	22	30	34	34	34	30	22	33	---
		Females	382	18	30	29	34	27	38	40	32	34	36	35	34	---
		Unknown	1	1	---	---	---	---	---	---	---	---	---	---	---	---
Manitou	88	Total	22	---	1	1	2	1	4	2	3	1	---	7	---	---
		Males	10	---	---	---	---	---	2	1	1	---	---	6	---	---
		Females	12	---	1	1	2	1	2	1	2	1	---	1	---	---
Marquette	104	Total	1,477	95	126	135	146	117	140	123	122	128	120	100	130	---
		Males	754	50	63	74	75	71	62	62	69	65	59	48	56	---
		Females	723	45	63	61	71	46	78	61	53	58	61	52	74	---
Mason	114	Total	487	27	45	35	38	57	36	43	40	44	40	43	39	---
		Males	259	13	21	18	19	32	22	27	19	19	22	26	21	---
		Females	228	14	24	17	19	25	14	16	21	25	18	17	18	---
Mecosta	108	Total	371	12	21	33	32	38	38	34	28	37	27	36	35	---
		Males	193	7	10	16	14	19	20	18	20	20	15	16	13	---
		Females	178	5	11	17	18	19	18	16	8	17	12	20	17	---
Menominee	109	Total	650	47	44	58	58	68	65	70	45	52	38	55	60	---
		Males	338	28	21	23	25	30	33	38	22	30	19	33	36	---
		Females	311	19	23	30	33	38	31	32	23	22	19	22	24	---
		Unknown	1	---	---	---	---	---	1	---	---	---	---	---	---	---
Midland	93	Total	249	17	17	12	16	21	26	34	28	24	11	17	26	---
		Males	120	7	10	5	7	10	13	19	16	10	5	7	11	---
		Females	129	10	7	7	9	11	13	15	12	14	6	10	15	---
Missaukee	122	Total	160	12	16	12	14	16	14	12	14	11	15	8	16	---
		Males	88	6	9	5	7	12	10	4	8	3	9	5	10	---
		Females	72	6	7	7	7	4	4	8	6	8	6	3	6	---
Monroe	130	Total	635	39	39	53	45	57	41	58	49	61	65	68	60	---
		Males	358	21	24	29	27	36	23	33	29	33	36	32	35	---
		Females	276	18	15	24	18	21	18	25	20	28	28	36	25	---
		Unknown	1	---	---	---	---	---	---	---	---	---	1	---	---	---
Montcalm	101	Total	571	43	38	46	45	55	38	47	59	62	54	50	38	1
		Males	287	21	20	20	22	27	16	24	32	34	29	22	20	---
		Females	283	22	18	26	23	28	17	23	27	28	25	27	18	1
		Unknown	1	---	---	---	---	---	---	---	---	---	---	1	---	---

BIRTHS BY COUNTIES, MONTHS AND SEX.

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Table 13.—CONTINUED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.													
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	
Montmorency	92	Total	23	2	1	2	2	3	2	5	3	3					
		Males	11	1	1	2			1		2	3	1				
		Females	12	1			2	3	1		3		2				
Muskegon	98	Total	929	75	63	83	81	71	82	76	90	76	80	73	3		
		Males	457	41	24	45	47	40	33	44	40	34	29	43	35	2	
		Females	468	33	36	38	34	31	49	32	50	42	47	37	38	1	
		Unknown	4	1	3												
Newaygo	104	Total	325	12	27	21	26	28	31	34	30	29	34	25	28		
		Males	166	7	15	14	11	13	17	20	18	15	16	10	10		
		Females	159	5	12	7	15	15	14	14	12	14	18	15	18		
Oakland	104	Total	554	38	35	61	41	47	36	47	51	56	49	45	48		
		Males	282	18	19	33	25	15	16	27	23	26	24	30	26		
		Females	271	20	15	28	16	32	20	20	28	30	25	15	22		
		Unknown	1	1													
Osceana	101	Total	312	21	20	20	28	35	29	25	29	25	22	26	32		
		Males	157	15	12	12	15	21	12	12	12	12	10	12	12		
		Females	155	6	8	8	13	14	17	13	17	13	12	14	20		
Ogemaw	91	Total	107	3	4	10	11	9	11	9	9	14	9	8	10		
		Males	51	2	2	3	6	7	5	4	5	6	3	4	4		
		Females	56	1	2	7	5	2	6	5	4	8	6	4	6		
Ontonagon	98	Total	130	5	13	7	11	14	10	12	13	7	7	13	18		
		Males	62	4	6	1	6	7	8	5	8	2	3	3	9		
		Females	63	1	7	6	5	7	2	7	4	4	4	7	9		
		Unknown	5								1	1		3			
Osceola	102	Total	348	17	18	28	24	54	25	30	28	40	34	24	26		
		Males	175	10	5	16	12	25	12	16	16	22	18	12	11		
		Females	172	7	13	12	12	29	13	14	12	18	15	12	15		
		Unknown	1										1				
Oscoda	300	Total	20			2	1	3		2	2	2	3	5			
		Males	15				1	2		1	2	2	3	4			
		Females	5			2		1		1				1			
Otsego	100	Total	76	4	6	6	10	8	5	5	6	7	3	9	7		
		Males	33	3	6	3	2	5	2	2	2	3		5	5		
		Females	38	1		3	8	3	3	3	4	4	3	4	2		

Table 13.—CONTINUED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year, 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Ottawa	99	Total	989	64	74	74	91	67	93	79	95	70	84	79	96	.....
		Males	480	26	35	40	49	30	47	49	50	36	37	37	44	.....
		Females	483	88	39	33	44	37	45	29	45	34	46	42	51	.....
		Unknown	6	.....	.....	1	1	.....	1	1	.....	.....	1	.....	1	.....
Presque Isle	104	Total	169	11	13	10	16	13	9	9	15	16	26	13	18	.....
		Males	86	4	11	4	10	7	5	5	6	6	12	7	9	.....
		Females	83	7	2	6	6	6	4	4	9	10	14	6	9	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Roscommon	80	Total	9	1	1	2	.....	.....	.....	.....	1	.....	2	1	1	.....
		Males	4	1	.....	1	.....	.....	.....	.....	.....	.....	1	.....	1	.....
		Females	5	.....	1	1	.....	.....	.....	.....	1	.....	1	1	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saginaw	105	Total	2,238	168	183	209	191	161	160	222	210	183	193	154	204	.....
		Males	1,147	78	99	109	96	82	78	130	115	86	94	84	96	.....
		Females	1,088	90	84	100	95	79	80	91	95	97	99	70	108	.....
		Unknown	3	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sanilac	103	Total	830	51	54	74	83	60	76	66	71	86	73	63	73	.....
		Males	422	26	25	39	45	34	39	30	41	42	42	34	25	.....
		Females	408	25	29	35	38	26	37	36	30	44	31	29	48	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schoolcraft	180	Total	199	15	5	23	12	14	17	25	19	25	10	19	15	.....
		Males	128	10	2	18	8	9	11	18	11	17	7	8	9	.....
		Females	71	5	3	5	4	5	6	7	8	8	3	11	6	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shiawassee	96	Total	419	25	23	32	27	41	36	23	46	35	39	38	48	.....
		Males	205	11	13	14	14	19	19	17	16	22	16	23	20	.....
		Females	213	14	10	18	13	22	17	10	30	13	23	15	28	.....
		Unknown	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Clair	99	Total	1,145	78	83	91	94	86	87	105	117	104	91	94	115	.....
		Males	568	36	39	46	45	41	38	49	67	53	43	53	58	.....
		Females	574	40	44	45	49	44	49	56	50	51	48	41	57	.....
		Unknown	3	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		Unknown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Joseph	99	Total	344	22	21	29*	30	35	33	27	37	31	29	27	23	.....
		Males	171	13	9	14	17	21	13	14	17	12	18	16	7	.....
		Females	172	9	12	15	13	14	20	13	19	19	11	11	16	.....
		Unknown	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....

Table 13.—CONCLUDED.—*Births by counties, months and sex.*

Counties.	Births—males to 100 females.	Sex.	Year. 1893.	Months, 1893.												
				January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Tuscola.....	99	Total	631	35	37	42	68	60	61	61	46	64	50	49	56	2
		Males	314	16	18	23	29	21	34	34	25	27	24	24	38	1
		Females	315	19	18	19	39	39	27	27	21	37	26	25	18	---
		Unknown	2	---	1	---	---	---	---	---	---	---	---	---	---	1
Van Buren.....	109	Total	465	28	26	38	33	36	35	37	67	53	41	37	34	---
		Males	242	14	16	20	15	19	23	18	26	30	20	23	18	---
		Females	223	14	10	18	18	17	12	19	41	23	21	14	16	---
Washtenaw.....	110	Total	500	28	37	50	38	39	43	37	54	48	49	38	41	3
		Males	261	10	18	22	20	19	28	18	20	26	33	24	22	1
		Females	238	18	19	28	13	20	14	19	34	22	16	14	19	2
		Unknown	1	---	---	---	---	---	1	---	---	---	---	---	---	---
Wayne.....	116	Total	8,570	728	707	770	662	579	653	687	708	745	714	778	831	13
		Males	4,593	369	389	430	357	305	352	365	375	402	373	400	472	4
		Females	3,969	353	318	339	305	274	301	322	333	343	339	377	357	8
		Unknown	8	1	---	1	---	---	---	---	---	---	2	1	2	1
Wexford.....	110	Total	254	20	7	28	19	27	21	24	24	25	23	21	15	---
		Males	133	11	5	13	8	13	11	16	9	16	11	11	9	---
		Females	121	9	2	15	11	14	10	8	15	9	12	10	6	---

NOTE TO TABLE 13.—COLOR OF CHILDREN BORN IN MICHIGAN, 1893.

Out of 47,722 births, the total number reported for the year, 47,412 were white. Only 301 children were given as belonging to other colors or races, of whom 127 were black, 54 mulatto and 120 Indian (including 27 halfbreeds). There were 9 of unspecified color. The proportion of white children is so large, constituting 99.35 per cent of the total births, that any deductions in regard to comparative birth-rates in the white and colored population of this State must, necessarily, be of very slight importance and of very doubtful value. Below are given, with specification of sex, the number of births of colors other than white in each county of the State:

BLACK BIRTHS.—Total for State, 127; 71 males and 56 females. By counties.—Wayne, 17 males, 7 females; Cass, 14 males, 6 females; Washtenaw, 5 males, 2 females; Van Buren, 4 males, 6 females; Kent, 4 males, 3 females; Jackson, 4 males, 2 females; Kalamazoo, 3 males, 5 females; Lenawee, 1 male, 7 females; Calhoun, Mecosta, 3 males, 2 females; Ingham, 2 males, 3 females; Allegan, Benzie, 1 male, 2 females; Monroe, 2 males; Oakland, 2 females; Bay, Berrien, Ionia, 1 male and 1 female; Antrim, Clinton, Isabella, St. Clair, each 1 male; Ottawa, Saginaw, each 1 female.

MULATTO BIRTHS.—Total for State, 54; 24 males and 30 females. By counties.—Wayne, 5 males, 2 females; Berrien, 3 males, 6 females; Wexford, 1 male (octoroon), 5 females; Van Buren, 3 males, 2 females; Kalamazoo, 3 males, 1 female; Cass, 3 males; Bay, Kent, 3 females; Genesee, 2 males; Monroe, 2 females; Montcalm, 1 male, 1 female; Oakland, Presque Isle, St. Joseph, each 1 male; Benzie, Calhoun, Clinton, Macomb, Tuscola, each 1 female.

INDIAN BIRTHS.—Total for State, 120; 51 males and 69 females. There are included in this number 14 males and 13 females of mingled white and Indian parentage. By counties.—(a) Indian: Emmet, 14 males, 25 females; Leelanau, 4 males, 11 females; Baraga, 2 males, 4 females; Isabella, 4 males, 3 females; Saginaw, 2 males, 3 females; Mason, 4 females; Mackinac, 3 males; Allegan, 2 males, 1 female; Schoolcraft, 1 male, 2 females; Antrim, 1 male, 1 female; Alcona, Cass, Charlevoix, Missaukee, each 1 male; Bay, Calhoun, each 1 female. (b) Half-breeds: Baraga, 9 males, 11 females; Ontonagon, 2 males; Amtrim, Charlevoix, each 1 male and 1 female; Leelanau, 1 male.

BIRTHS OF UNKNOWN COLOR.—Total for State, 9; 1 male, 2 females and 6 of unknown sex. By counties.—Allegan, 2 females, 2 of unknown sex; Ontonagon, 3 of unknown sex; Washtenaw, 1 male and 1 of unknown sex.

Table 13 gives a detailed statement of the number of births, by sex and months, for each county of the State. In this table is also incorporated a statement of the ratio of male births to 100 female births in each county of the State, and a Note appended to the table presents the particulars in regard to the color of children born in Michigan in the year 1893. It gives a full statement, by counties, of the number and sex of all births, of color other than white. Only 301 such were reported against a total of 47,412 white children born. The ratio of colored births to total births is 0.63 per cent; of black births (127 in number), 0.27 per cent; of mulatto births (54 in number), 0.11 per cent; and the Indian births (120 in number), 0.25 per cent.

The number of male children born to 100 females, is, for the State, 108. The ratio was 110 to 100 in 1891, and 109 to 100 in the preceding year. This proportion obtains with trifling variations from year to year. Comparison of different portions of the State shows very different ratios, varying from only 83 males to 100 females in Manitou county, and 80 males to 100 females in Roscommon county, to 300 per 100 in Oscoda, 157 per 100 in Alger, etc. As the returns were very small numerically in these counties, such extreme ratios are probably only accidental. In general, statistics based upon very small numerical values are subject to great variations from accidental causes, and, if any stress whatever be placed upon them, may become very misleading.

PARENT-NATIVITY OF CHILDREN BORN.

The four tables following relate to the important subject of the parent-nativity of children born in this State during the year 1893, together with such comparisons with the results of previous years as are necessary to a full understanding of the subject.

Table 14.—Showing, by sex, the parent-nativity of children born in Michigan during the year 1893, according to the returns.

Nativity of parents of children born, 1893.	Total births, 1893.							
	Number.				Per cent of total.			
	Total.	Males.	Fe-males.	Un-known.	Total.	Males.	Fe-males.	Un-known.
All nativities	47,722	24,734	22,909	79	100.0	100.0	100.0	100.0
Both parents native-born	19,616	10,144	9,442	30	41.1	41.0	41.2	37.9
Both parents foreign-born	18,864	9,572	8,770	22	38.5	38.7	38.3	27.8
Foreign father and native mother	5,250	2,688	2,555	7	11.0	10.9	11.2	8.9
Foreign mother and native father	3,128	1,612	1,512	4	6.6	6.5	6.6	5.1
Unknown mother, father native	148	70	76	2	.3	.3	.3	2.5
Unknown mother, father foreign	224	117	107	-----	.5	.5	.5	-----
Unknown father, mother native	252	137	114	1	.5	.6	.5	1.3
Unknown father, mother foreign	113	60	51	2	.2	.2	.2	2.5
Both unknown	627	334	282	11	1.3	1.3	1.2	13.9
One or both native*	28,394	14,651	13,699	44	59.5	59.2	59.8	55.7
One or both foreign*	27,079	14,049	12,995	35	56.7	56.8	56.7	44.3

* Including cases where nativity of either parent is unknown.

In discussing this question in the report for 1891 it was noted that the percentage of births of children of native-born parents had diminished with considerable uniformity since 1881, while the percentage of those born of foreign-born parents had proportionately increased. Attention was then called to the "probability, if the present rate of change continues, of the latter being in excess in another year for the first time in the history of the State registration." While the returns for 1892 so far confirmed this prediction that the percentages of children born of native-born and foreign-born parents were exactly the same (39.7 per cent), it was then pointed out that the conditions under which the progressive changes noted had taken place, had materially changed, and that "it is not probable that this change will progress in the same manner during 1893, nor, perhaps, for some years, as the closing of the mines during the winter of 1893-94 and the financial distress prevailing in the upper peninsula in consequence thereof, have greatly diminished the number of marriages from that portion of the State, which has been accustomed to furnish the largest number of marriages of foreign-born persons, together with a high birth-rate for children of foreign-born parents based thereon." These remarks have been fully justified by the results of the registration of 1893 presented in these tables. The ratio of native-born parents has risen to 41.1 per cent of the total number, while that of foreign-born parents has fallen to 38.5 per cent, thus showing a difference of 2.6 per cent instead of the equality of the preceding year. At the ordinary rate of yearly variation, it will require several years for the old relation to be regained.

Table 15.—*Parent-nativity of children born in Michigan for each of the years 1891-93, and the average for ten years, 1883-92.*

Nativity of parents of children born.	1891.		1892.		1893.		Average for ten years, 1883-92.		
	Num-ber.	Per cent of total.	Num-ber.	Per cent of total.	Num-ber.	Per cent of total.	Num-ber.	Per cent of total.	
All nativities	50,812	100.0	46,221	100.0	47,722	100.0	45,522	100.0	
Both native-born	20,425	40.2	18,368	39.7	19,616	41.1	19,328	42.2	
Both foreign-born	20,272	39.8	18,344	39.7	18,364	38.5	17,306	37.8	
Foreign father and native mother	5,428	10.8	5,061	10.9	5,250	11.0	5,012	10.9	
Foreign mother and native father	3,119	6.1	2,922	6.3	3,128	6.6	2,855	6.2	
One or both unknown	1,568	3.1	1,526	3.3	1,364	2.9	1,321	2.9	
One or both parents native*	28,972	57.0	26,351	57.0	27,994	58.7	27,195	59.3	
One or both parents foreign*	28,819	56.8	26,327	57.0	26,742	56.0	23,859	52.1	
Father {	Native	23,837	46.9	21,567	46.7	22,892	48.0	22,358	48.8
	Foreign	25,942	51.0	23,579	51.0	23,838	50.0	22,438	49.0
	Unknown	1,033	2.1	1,075	2.3	992	2.1	1,031	2.3
Mother {	Native	26,048	51.3	23,699	51.3	25,118	52.6	24,543	53.6
	Foreign	23,483	46.2	21,362	46.2	21,605	45.3	20,250	44.2
	Unknown	1,281	2.5	1,160	2.5	999	2.1	1,029	2.2

* Excluding cases where nativity of either parent is unknown.

Table 16 exhibits these changes for previous years and quinquennial periods of registration, and may be compared with the similarly constituted one under the subject of marriages (Table 32), where analogous changes may be seen to have taken place, although the ratios of marriages of native-born persons are much larger absolutely. Those of foreign-born persons consequently appear to be much more prolific, since a smaller percentage of marriages produces an equal percentage of children.

Table 16.—*Percentage of children, by nativity, born in Michigan during the years 1891-93; compared with averages for the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.*

Years and periods averaged.	Nativity of parents.—Per cent of total.				
	Both native-born.	Both foreign-born.	Foreign father and native mother.	Native father and foreign mother.	One or both unknown.
Average, 1871-75.....	44.8	34.3	9.5	5.2	6.2
Average, 1876-80.....	46.0	34.1	11.0	5.7	3.1
Average, 1881-85.....	43.7	35.5	11.5	6.2	2.9
Average, 1886-90.....	42.7	37.6	10.7	6.2	2.8
Year 1891.....	40.2	39.8	10.8	6.1	3.1
Year 1892.....	39.7	39.7	10.9	6.3	3.3
Year 1893.....	41.1	38.5	11.0	6.6	2.9

Table 17 exhibits for each county the nativity of the parents of children born in 1893. For the State, the number of parents both native-born is in excess of those of foreign birth, but in many counties, especially those of the upper peninsula and those containing large cities, the parents of foreign birth greatly outnumber the native-born parents. In the southern portion of the State and among the older settled counties where the birth-rate is small, the reverse is generally true, and the foreign-born parents are in the minority.

Among the counties showing a large predominance of births of children to parents both of whom were native-born, are Hillsdale, 225 to 4; Cass, 251 to 11; Eaton, 368 to 5; Van Buren, 403 to 19; Barry, 304 to 23; Gratiot, 391 to 23, and Branch, 295 to 23.

In decided contrast to the above, the following counties with a marked excess of births of foreign parentage may be cited: Dickinson, 474 to 62; Gogebic, 502 to 62; Houghton, 1,223 to 200; Marquette, 1,031 to 170; Presque Isle, 112 to 26.

Wayne county, including the city of Detroit, shows a large excess of foreign couples who were parents in 1893 over native couples; the numbers are 4,845 and 2,125 respectively, which should be understood, as in all the preceding cases, to include only cases in which both parents are of the same nativity. An excess of foreign parents may be noted in Kent (Grand Rapids) and Bay (Bay City) counties, but not in Saginaw, in which native parents are slightly in the majority.

Table 17.—*Exhibiting for the State and counties of Michigan, by sex, the parent-nativity of children returned for the year 1893. (Still births included.)*

State and counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both unknown.
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
State	Total	47,722	19,616	18,364	5,250	3,128	148	224	252	113	627
	Males	24,734	10,144	9,572	2,688	1,612	70	117	137	60	384
	Females	22,909	9,442	8,770	2,555	1,512	76	107	114	51	282
	Unknown	79	30	22	7	4	2		1	2	11
Alcona	Total	105	25	57	16	5		2			
	Males	57	14	30	8	3		2			
	Females	48	11	27	8	2					
Alger	Total	18	7	7	2						2
	Males	11	3	5	1						2
	Females	7	4	2	1						
Allegan	Total	743	511	88	79	43	8	6	4	1	3
	Males	366	257	41	37	24	3	2	2		
	Females	374	251	47	42	19	5	4	2	1	3
	Unknown	3	3								
Alpena	Total	455	53	288	46	31	6	1	8	8	14
	Males	248	35	157	22	15	2		3	6	8
	Females	206	18	130	24	16	4	1	5	2	6
	Unknown	1		1							
Antrim	Total	209	97	54	35	21			1		1
	Males	97	45	23	18	10					1
	Females	112	52	31	17	11			1		
Arenac	Total	151	34	61	33	18		1			4
	Males	76	19	28	18	8					3
	Females	74	15	32	15	10		1			1
	Unknown	1		1							
Baraga	Total	146	44	81	12	2	1		5	1	
	Males	72	18	41	9	2	1		1		
	Females	73	26	39	3				4	1	
	Unknown	1		1							
Barry	Total	370	304	23	26	10			5		2
	Males	183	152	13	12	3			3		
	Females	187	152	10	14	7			2		2

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Bay	Total	1,625	435	788	232	157	2	3	3	5	
	Males	859	227	409	126	90	2	1	1	3	
	Females	765	208	379	106	67		2	2	1	
	Unknown	1								1	
Benzie	Total	148	82	35	17	9	2	1		2	
	Males	80	45	23	4	5	2			1	
	Females	68	37	12	13	4		1		1	
Berrien	Total	681	463	119	52	25	4		3	15	
	Males	364	250	57	24	21	3		3	6	
	Females	312	211	62	27	4	1			7	
	Unknown	5	2		1					3	
Branch	Total	357	295	23	14	16	4	2	2	1	
	Males	178	151	8	7	10		1		1	
	Females	179	144	15	7	6	4	1	2		
Calhoun	Total	661	496	67	56	29	5	1	6	1	
	Males	315	246	30	22	9	1	1	6		
	Females	345	249	37	34	20	4			1	
	Unknown	1	1								
Cass	Total	293	251	11	14	9	4		3	1	
	Males	152	134	6	5	3	3		1		
	Females	141	117	5	9	6	1		2	1	
Charlevoix	Total	191	94	42	28	23	2		1	1	
	Males	91	42	18	16	12	2		1		
	Females	100	52	24	12	11				1	
Cheboygan	Total	262	73	114	51	24					
	Males	136	49	56	18	13					
	Females	126	24	58	33	11					
Chippewa	Total	272	32	193	21	19		1	1	3	
	Males	155	16	107	12	14		1	1	2	
	Females	117	16	86	9	5				1	
Clare	Total	167	76	43	30	11	3	1		3	
	Males	79	37	19	13	7	1	1		1	
	Females	88	39	24	17	4	2			3	

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both unknown.
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Clinton	Total	489	314	39	47	17	1	1	2		18
	Males	230	164	19	26	9	1		2		9
	Females	209	150	20	21	8		1			9
Crawford	Total	38	20	11	4	2					1
	Males	20	13	3	1	2					1
	Females	18	7	8	3						
Delta	Total	444	100	228	69	44			2		1
	Males	211	49	106	39	15			2		
	Females	233	51	122	30	29					1
Dickinson	Total	590	62	474	32	14			1	1	6
	Males	324	40	256	14	10				1	3
	Females	266	22	218	18	4			1		3
Eaton	Total	409	368	5	15	14	3	1	2		1
	Males	219	198	2	6	8	2	1	1		1
	Females	188	168	3	9	6	1		1		
	Unknown	2	2								
Emmet	Total	215	145	39	14	15			1	1	
	Males	100	66	21	4	9					
	Females	115	79	18	10	6			1	1	
Genesee	Total	667	464	65	66	62	5		8		2
	Males	346	247	26	33	35	3		1		1
	Females	321	217	39	33	27	2		2		1
Gladwin	Total	72	28	30	9	5					
	Males	36	14	12	8	2					
	Females	36	14	18	1	3					
Gogebic	Total	709	62	502	28	21	1	4	1		90
	Males	377	36	289	16	9		2	1		44
	Females	331	26	233	12	12	1	2			45
	Unknown	1									1
Grand Traverse	Total	279	174	54	20	17	3	1	5	1	4
	Males	141	88	31	5	9	1		3	1	3
	Females	138	86	23	15	8	2	1	2		1

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both unknown.
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Gratiot.....	Total	499	391	23	46	28	2	-----	5	-----	4
	Males	250	190	11	31	14	-----	-----	2	-----	2
	Females	249	201	12	15	14	2	-----	3	-----	2
Hillsdale.....	Total	255	225	4	8	7	3	-----	2	-----	6
	Males	134	115	2	5	7	1	-----	1	-----	3
	Females	120	110	2	3	-----	2	-----	1	-----	2
	Unknown.....	1	-----	-----	-----	-----	-----	-----	-----	-----	1
Houghton.....	Total	1,720	200	1,223	216	73	-----	-----	2	4	2
	Males	849	85	618	109	32	-----	-----	2	1	2
	Females	871	115	605	107	41	-----	-----	-----	3	-----
Huron.....	Total	860	154	442	168	88	1	-----	3	3	1
	Males	446	80	241	74	48	-----	-----	1	2	-----
	Females	411	74	200	92	40	1	-----	2	1	1
	Unknown.....	3	-----	1	2	-----	-----	-----	-----	-----	-----
Ingham.....	Total	605	429	64	44	34	1	3	4	1	25
	Males	310	227	32	16	12	-----	2	1	-----	20
	Females	292	199	32	28	22	1	1	3	1	5
	Unknown.....	3	3	-----	-----	-----	-----	-----	-----	-----	-----
Ionia.....	Total	475	338	42	46	32	5	2	5	1	4
	Males	259	183	25	29	17	2	-----	2	-----	1
	Females	214	155	17	16	15	2	2	3	1	3
	Unknown.....	2	-----	-----	1	-----	1	-----	-----	-----	-----
Iosco.....	Total	320	58	171	48	28	2	7	1	-----	5
	Males	164	28	92	21	15	1	3	-----	-----	4
	Females	156	30	79	27	13	1	4	1	-----	1
Iron.....	Total	144	21	68	16	9	5	22	1	-----	2
	Males	75	12	33	8	3	4	14	1	-----	-----
	Females	66	9	35	7	6	1	8	-----	-----	-----
	Unknown.....	3	-----	-----	1	-----	-----	-----	-----	-----	2
Isabella.....	Total	451	265	89	51	40	-----	-----	3	1	2
	Males	228	122	51	31	21	-----	-----	1	-----	2
	Females	223	143	38	20	19	-----	-----	2	1	-----

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Jackson	Total	714	486	107	65	45	2		3	2	4
	Males	379	257	63	34	22	1			2	
	Females	333	229	44	31	23	1		3		2
	Unknown	2									2
Kalamazoo	Total	787	482	184	67	43			3		8
	Males	421	265	104	27	18			3		4
	Females	364	216	80	40	24					4
	Unknown	2	1			1					
Kalkaska	Total	96	54	15	15	10		1	1		
	Males	48	32	6	3	6			1		
	Females	48	22	9	12	4		1			
Kent	Total	2,511	906	1,095	262	161	2	2	7	3	73
	Males	1,314	479	568	134	83	2	1	2	1	44
	Females	1,194	424	527	128	78		1	5	2	29
	Unknown	3	3								
Keweenaw	Total	104	15	70	15	4					
	Males	59	9	38	10	2					
	Females	45	6	32	5	2					
Lake	Total	94	42	28	11	8	1	2	1		1
	Males	46	21	11	7	3	1	1	1		1
	Females	48	21	17	4	5		1			
Lapeer	Total	490	248	103	82	56					1
	Males	253	130	49	44	30					
	Females	237	118	54	38	26					1
Leelanau	Total	218	80	78	47	11	1			1	
	Males	122	43	44	27	8					
	Females	95	37	34	20	3	1				
	Unknown	1								1	
Lenawee	Total	656	502	70	47	28	4		3		2
	Males	346	261	41	27	15	2				
	Females	309	240	29	20	13	2		3		2
	Unknown	1	1								

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Livingston	Total	310	255	27	20	7	1				
	Males	165	134	12	18	5	1				
	Females	144	121	14	7	2					
	Unknown	1		1							
Luce	Total	62	9	34	8	6		2			
	Males	35	5	18	4	5					
	Females	27	4	16	4	1		2			
Mackinac	Total	115	43	45	10	6			3		
	Males	56	27	19	4	2			1		
	Females	59	16	26	6	4			2		
Macomb	Total	591	345	132	75	37	1				
	Males	319	196	67	39	16					
	Females	271	148	65	36	21	1				
	Unknown	1	1								
Manistee	Total	741	114	436	54	34	8	79	2	4	10
	Males	358	55	218	29	9	3	39		2	3
	Females	382	58	218	25	25	5	40	2	2	7
	Unknown	1	1								
Manitou	Total	22	7	8	6	1					
	Males	10	3	3	4						
	Females	12	4	5	2	1					
Marquette	Total	1,477	170	1,031	191	71		2	4	2	6
	Males	754	91	519	95	40		2	3	1	3
	Females	723	79	512	96	31			1	1	3
Mason	Total	487	157	242	53	29		1	2	2	1
	Males	259	88	127	28	13		1	1	1	
	Females	228	69	115	25	16			1	1	1
Mecosta	Total	371	191	84	61	31			2	1	1
	Males	193	104	43	29	15				1	1
	Females	178	87	41	32	16			2		
Menominee	Total	650	115	361	111	31	2	8	1		21
	Males	338	85	177	59	17		5			15
	Females	311	50	183	52	14	2	3	1		6
	Unknown	1		1							

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Midland	Total	249	119	70	43	17					
	Males	120	60	30	24	6					
	Females	129	59	40	19	11					
Missaukee	Total	160	50	77	22	7				1	3
	Males	88	23	42	17	3				1	2
	Females	72	27	35	5	4					1
Monroe	Total	635	524	41	46	21		1	2		3
	Males	358	294	26	26	8			1		3
	Females	276	226	15	20	13		1	1		
	Unknown	1	1								
Montcalm	Total	571	395	113	63	24	3	15	9	3	6
	Males	287	166	62	26	14	2	6	5	2	4
	Females	283	168	51	37	10	1	9	4	1	2
	Unknown	1	1								
Montmorency	Total	23	6	9	4	3	1				
	Males	11	4	3	1	2	1				
	Females	12	2	6	3	1					
Muskegon	Total	929	272	471	104	52	2		3	3	23
	Males	457	131	241	52	24			1		8
	Females	468	141	230	51	26	2		1	3	14
	Unknown	4			1	2			1		
Newaygo	Total	325	189	77	42	14	1		2		
	Males	166	93	41	22	8			2		
	Females	159	96	36	20	6	1				
Oakland	Total	554	405	45	55	42	1	2	2	1	1
	Males	282	203	24	28	25		1	2	1	
	Females	271	202	21	29	17		1			1
	Unknown	1					1				
Oceana	Total	312	182	65	29	30					6
	Males	157	90	34	16	14					3
	Females	155	92	31	13	16					3
Ogemaw	Total	107	34	33	22	12	2	1	1		3
	Males	51	18	18	11	6	1	1			1
	Females	56	16	20	11	6	1		1		1

Table 17.—CONTINUED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Ontonagon	Total	130	51	39	31	3	3	1	2		
	Males	62	24	17	16	2	1		2		
	Females	63	26	18	15	1	2	1			
	Unknown	5	1	4							
Osceola	Total	348	133	96	43	23		1	1	1	
	Males	175	84	56	22	10		1	1	1	
	Females	172	98	40	21	13					
	Unknown	1	1								
Oscoda	Total	20	9	5	3	3					
	Males	15	6	4	3	2					
	Females	5	3	1		1					
Otsego	Total	76	29	29	7	8				3	
	Males	38	13	16	5	2				2	
	Females	38	16	13	2	6				1	
Ottawa	Total	969	364	358	143	81	5	7	6	2	
	Males	480	189	171	66	42	3	4	3		
	Females	483	174	185	77	38	2	3	3	1	
	Unknown	6	1	2		1				1	
Presque Isle	Total	169	26	112	19	10	1	1			
	Males	86	15	58	7	5	1				
	Females	83	11	54	12	5		1			
Roscommon	Total	9	2	5	2						
	Males	4		3	1						
	Females	5	2	2	1						
Saginaw	Total	2,238	889	851	300	159	3	5	19	1	
	Males	1,147	445	446	153	86		2	10	1	
	Females	1,088	442	404	147	73	3	3	9		
	Unknown	3	2	1							
Sanilac	Total	880	171	364	163	110	6	1	5	4	
	Males	422	89	186	78	55	4	1	3	4	
	Females	408	82	178	85	55	2		2		

Table 17.—CONCLUDED.—*Births by counties, parent-nativity and sex.*

Counties.	Sex.	Children born, 1893.	Nativity of parents of children born in 1893.								Both unknown.
			Both native-born.	Both foreign-born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father.		Mother.		
							Native.	Foreign.	Native.	Foreign.	
Schoolcraft.....	Total	199	37	120	28	12					2
	Males	128	24	75	18	9					2
	Females.....	71	13	45	10	3					
Shiawassee	Total	419	303	33	42	27	1		3		5
	Males	205	150	18	20	15					2
	Females.....	213	153	20	21	12	1		3		3
	Unknown	1			1						
St. Clair	Total	1,145	447	350	199	126			3	4	6
	Males	568	215	183	103	62			1	1	3
	Females.....	574	230	166	96	74			2	3	3
	Unknown	3	2	1							
St. Joseph	Total	344	265	27	25	10	8	2	3		4
	Males	171	133	11	14	5	3		2		3
	Females.....	172	131	16	11	5	5	2	1		1
	Unknown	1	1								
Tuscola.....	Total	631	326	128	85	86	1	1			4
	Males	314	167	57	41	44	1	1			3
	Females.....	315	158	70	44	42					1
	Unknown	2	1	1							
Van Buren	Total	465	403	19	18	20			3		2
	Males	242	210	7	12	9			3		1
	Females.....	223	193	12	6	11					1
Washtenaw	Total	500	338	79	50	27	2		3		1
	Males	261	177	39	29	10	2		3		1
	Females.....	238	161	39	21	17					
	Unknown	1		1							
Wayne	Total	8,570	2,125	4,845	726	550	15	30	66	47	166
	Males	4,593	1,088	2,625	402	298	8	19	41	27	85
	Females.....	3,969	1,036	2,214	324	252	7	11	25	20	80
	Unknown	8	1	6							1
Wexford	Total	254	124	81	25	20			2	1	1
	Males	133	71	36	12	11			2		1
	Females.....	121	53	45	13	9				1	

STILL-BIRTHS, TWINS AND ILLEGITIMATES.

The remaining tables of this portion of the report, with the exception of the two at its close referring to delinquent townships and townships reporting "no births," are devoted to the consideration of certain classes of births of peculiar interest, namely, births of still-born children, of twins and of illegitimate children.

Still-births are returned as deaths as well as births, and in practice it is found that a careful comparison of the two sets of returns is necessary in order that none may be omitted or twice counted. Still-births are defined, for registration purposes, in the instructions issued to the enumerators (supervisors), as cases in which the children were *born dead*, not having lived an appreciable time, hours or days, after birth. It was observed in the examination of the returns that frequently cases would be reported as "still-born" in which the child was also reported to have lived a day or more. For such cases the enumerators are directed to report another cause of death, and the term "unknown" is substituted for "still-born" if no other cause can be ascertained. Such discrepancies may arise from some confusion or misapprehension in the minds of the enumerators or county clerks as to the exact meaning of the term *still-born*. Thus, a county clerk, in one instance, stated that he thought the term referred to births that occurred "without any particular fuss."

Table 18 shows the number of twins, illegitimates, and still-births returned for each county in the State. From certain counties the returns are obviously imperfect, owing, probably, to negligence in making the transcript. Thus, it is not credible that no twins, no illegitimates, and only one still-born child were born in the county of Hillsdale, with 30,271 inhabitants, according to the census of 1894, during the entire year 1893, while 4 twins, 2 illegitimates, and 6 still-births were reported from the adjoining county of Branch, having a population of 26,204, during the same time. It is probably true that all of these returns are below the truth, owing to the obvious difficulty of securing full reports, but ordinarily the numbers reported from different counties should afford a fair basis of comparison.

Table 18.—*Number of pairs of twins, illegitimate children and still-births born in Michigan during the year 1893, by counties.*

State and counties.	Number of pairs of twins born in 1893.*	Number of illegitimate children born in 1893.†	Number of still-births in 1893.‡	Counties.	Number of pairs of twins born in 1893.*	Number of illegitimate children born in 1893.†	Number of still-births in 1893.‡
State	493	505	1,019	Arenac.....	5	1	3
				Baraga.....	1	8	4
Alcona.....			4	Barry	6	4	8
Alger		1		Bay.....	21	8	20
Allegan.....	5	3	19	Benzie.....	1		2
Alpena.....	1			Berrien.....	3	3	22
Antrim.....		3	5	Branch.....	4	2	6

* Includes 28 males, 26 females and 2 of unknown sex, still-born; 3 males and 3 females, illegitimate. There were 3 pairs of black twins, 2 of Indian twins, and 1 pair returned as "male white, female black."

† Includes 3 males and 4 females, still-born; 2 pairs of male twins (parents native-born); and 2 pairs of female twins (fathers unknown nativity, mothers foreign-born); by color, 5 males and 2 females black (one of the latter still-born); 2 females Indian; 2 males and 4 females half-breed.

‡ Includes 4 males, 3 females, black; 2 males, 1 female, mulatto; 1 male, 2 females, 6 unknown sex, of *unknown (unspecified) color*.

STILL-BIRTHS, TWINS AND ILLEGITIMATES BY COUNTIES. 55

Table 18.—CONCLUDED.—*Twins, illegitimates and still-births, by counties.*

Counties.	Number of pairs of twins born in 1898.*	Number of illegitimate children born in 1898.†	Number of still-births in 1898.‡	Counties.	Number of pairs of twins born in 1898.*	Number of illegitimate children born in 1898.†	Number of still-births in 1898.‡
Calhoun.....	6	6	9	Mackinac.....	2	-----	4
Cass.....	4	2	8	Macomb.....	6	-----	14
Charlevoix.....	2	-----	2	Manistee.....	10	2	18
Cheboygan.....	2	1	3	Manitou.....	2	-----	-----
Chippewa.....	6	4	2	Marquette.....	19	7	48
Clare.....	-----	2	3	Mason.....	5	6	10
Clinton.....	2	2	7	Mecosta.....	4	1	6
Crawford.....	-----	1	-----	Menominee.....	3	1	3
Delta.....	8	1	9	Midland.....	3	-----	-----
Dickinson.....	5	1	26	Missaukee.....	3	1	5
Eaton.....	3	2	5	Monroe.....	8	3	26
Emmet.....	4	1	7	Montcalm.....	5	4	12
Genesee.....	9	5	12	Montmorency.....	-----	-----	-----
Gladwin.....	-----	-----	4	Muskegon.....	12	3	23
Gogebic.....	5	-----	9	Newaygo.....	4	2	4
Grand Traverse.....	2	2	10	Oakland.....	5	3	9
Gratiot.....	6	3	8	Oceana.....	1	-----	3
Hilledale.....	-----	-----	1	Ogemaw.....	3	1	2
Houghton.....	14	13	30	Ontonagon.....	3	1	7
Huron.....	6	5	14	Osceola.....	6	2	9
Ingham.....	9	1	22	Oscoda.....	-----	-----	1
Ionia.....	5	4	9	Otsego.....	1	-----	7
Iosco.....	1	2	1	Ottawa.....	15	5	17
Iron.....	1	-----	1	Presque Isle.....	4	-----	5
Isabella.....	8	4	7	Roscommon.....	-----	-----	-----
Jackson.....	11	5	27	Saginaw.....	20	22	63
Kalamasoo.....	9	10	10	Sanilac.....	12	16	9
Kalkaska.....	2	-----	3	Schoolcraft.....	2	1	3
Kent.....	26	28	60	Shiawasee.....	4	1	9
Keweenaw.....	2	2	2	St. Clair.....	10	6	24
Lake.....	-----	2	1	St. Joseph.....	4	7	14
Lapeer.....	5	1	9	Tuscola.....	3	-----	7
Leelanau.....	1	1	5	Van Buren.....	3	3	15
Lenawee.....	8	2	17	Washtenaw.....	8	2	9
Livingston.....	4	-----	8	Wayne.....	71	257	177
Luce.....	1	-----	3	Wexford.....	3	2	9

The ratios of twins, illegitimate children, and still-born children to total births are shown in Table 19 for 1893, and for several years preceding. The percentages of still-births and twins are somewhat below the average, while the rate of illegitimacy, as reported, is higher than common.

Table 19.—*The relation of still-born, twin and illegitimate children to total births returned, for the years 1890-93, and the average for ten years, 1883-92.*

Still-born, twin and illegitimate children.	Years.				
	1890.	1891.	1892.	1893.	Av. for 10 years, 1883-92.
All children born	52,306	50,812	46,221	47,722	45,822
Still-births.. { Number	1,397	1,090	1,014	1,019	1,068
{ Per cent of total	2.5	2.1	2.2	2.1	2.3
Twins	1,542	1,354	1,114	986	1,108
{ Number	1,542	1,354	1,114	986	1,108
{ Per cent of total	2.9	2.7	2.4	2.1	2.4
Illegitimates { Number	455	389	405	505	374
{ Per cent of total .....	.9	.8	.9	1.1	.8

Table 20.—*Exhibiting the number of pairs of twins and cases of triplets returned in Michigan for the ten years 1884-93, and the average for each of these years.*

Years.	Pairs of twins.	Cases of triplets.	No. of births to one pair of twins.	No. of births to one case of triplets.
1884	450	4	90	10,102
1885	481	7	88	6,017
1886	501	6	82	6,849
1887	528	5	88	9,245
1888	533	8	84	6,119
1889	527	6	93	8,212
1890	771	6	68	8,718
1891	677	7	75	7,259
1892	557	6	83	7,704
1893	493	3	99	15,907
Average, 10 years, 1884-93	557	6	85	8,613

TRIPLETS.—There were three cases of triplets recorded for 1893, as follows: Branch county, 2 males, 1 female, born in January; Genesee county, 3 females, born in January; Kent county, 3 females, born in March. All were white and with both parents native-born.

In Table 20 may be found a statement of the number of pairs of twins and sets of triplets reported for ten years past, with the average for that period. The ratios to total births are also stated, the inconvenient inverse ratio of births to cases being used. Although this manner of stating relations between different numbers is quite common in statistical work, the principle is defective, inasmuch as the numerical value of the rate decreases as the actual rate existing between the numbers compared increases. The ratios as stated are not readily nor exactly compared with one another. This table, the only remaining instance in which the inverse ratio is used in this report, will be replaced in the next report by the more convenient arrangement.

The months of birth of still-births, twin children and illegitimates may be readily compared in Table 21. This table is affected, probably in the same proportion as the total number of births, by omissions in the early months of the year due to the greater lapse of time before registration, but the relative numbers of births of each class in any month may probably be taken as correctly represented.

Table 21.—*Exhibiting, by sex and months, the number of still-born, twin and illegitimate children returned in Michigan for the year 1893.*

Condition.	Sex.	Year, 1893.	Months of birth, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Still-births	Total	1,019	67	69	96	91	87	74	90	90	81	84	84	103	3
	Males	572	31	42	58	51	52	38	53	51	46	48	50	52	---
	Females	298	31	23	35	37	33	33	34	37	33	30	28	44	---
	Unknown	49	5	4	3	3	2	3	3	2	2	6	6	7	3
Twins*	Total	986	80	96	74	92	74	62	80	90	80	80	80	96	2
	Males	490	42	50	38	36	38	36	35	51	38	37	40	48	1
	Females	486	38	46	36	53	36	25	45	39	42	41	38	46	1
	Unknown	10	---	---	---	3	---	1	---	---	---	2	2	2	---
Illegitimates	Total	505	48	45	48	36	53	33	38	46	35	38	36	49	---
	Males	278	25	27	31	20	27	22	22	24	22	25	16	17	---
	Females	227	23	18	17	16	26	11	16	22	13	13	20	32	---

* The total number of twin children, i. e. twice the number of pairs of twins. Triplets are not included.

In Table 22 the parent-nativities of still-born, twin and illegitimate children are compared for the year 1893, sex being specified in each case. In ordinary years foreign-born parents show a slight excess in the proportion of still-born children, and rather a marked excess in the proportion of twins. In 1893, owing to the great reduction in the proportion of births to foreign-born parents, the native-born parents of still-births are in excess for the first time in many years, while foreign-born parents of twins only slightly exceed the native-born. Native-born parents are, as usual, in the majority as regards illegitimate parentage. This probably does not arise from any greater tendency to immorality on the part of the native white population of the State, but simply from the fact that under the term "native" are included the black, mulatto and Indian inhabitants, for all of which classes the illegitimate birth-rate is high.

Table 22.—*Parent-nativity of still-born, twin and illegitimate children returned in Michigan for the year 1893.*

Nativity of parents.	Number of still-born children, 1893.				Number of pairs of twins, 1893.					Number of illegitimate children, 1893.		
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	One of each.	Unknown.	Total.	Males.	Females.
All nativities.....	1,019	572	398	49	493	154	152	183	4	505	278	227
Both native-born.....	420	252	148	20	194	64	65	64	1	70	36	34
Both foreign-born.....	329	187	129	13	209	50	64	92	3	29	17	12
Foreign father and native mother.....	99	49	46	4	43	20	12	11	---	12	8	4
Foreign mother and native father.....	48	19	26	3	32	15	7	10	---	10	5	5
Unknown mother, father native.....	5	2	1	2	---	---	---	---	---	4	1	3
Unknown mother, father foreign.....	8	6	2	---	2	---	1	1	---	3	1	2
Unknown father, mother native.....	13	5	7	1	3	2	---	1	---	143	78	65
Unknown father, mother foreign.....	6	2	3	1	4	1	2	1	---	74	39	35
Both unknown.....	91	50	36	5	6	2	1	3	---	160	93	67
One or both native*.....	585	327	228	30	271	101	84	85	1	239	128	111
One or both foreign*.....	490	263	206	21	290	86	86	115	3	128	70	58

* Including cases in which nativity of either parent is unknown.

In Table 23 it is shown that about 108 males are born alive for every 100 females; this is the result of the experience of ten years. For 1893 the ratio was 107 to 100. The proportion of males in twin and illegitimate births is smaller, females being in excess among illegitimates as a rule, to which, however, the year 1893 forms a decided exception. Still-births, on the contrary, show a great excess of males, in explanation of which the added dangers during delivery incident to the larger size of the head in male infants may be referred to.

Table 23.—*Exhibiting the proportion of males to females among children born alive, still-births, twins and illegitimates in Michigan during the years 1892-93, with average for ten years, 1883-92.*

Condition.	1892.				1893.				Average for 10 years, 1883-92.			
	Males.	Females.	Unknown.	Males to 100 females.	Males.	Females.	Unknown.	Males to 100 females.	Males.	Females.	Unknown.	Males to 100 females.
Born alive.....	23,551	21,621	35	109	24,162	22,511	30	107	23,283	21,489	32	108
Still-births.....	597	874	43	160	572	398	49	144	610	416	42	147
Twins*.....	553	559	2	99	490	486	10	101	555	551	2	101
Illegitimates.....	191	206	8	93	278	227	---	122	181	189	4	96

* Twin children, i. e., twice the number of pairs of twins born; triplets not included.

PARENT-NATIVITY OF PLURAL AND ILLEGITIMATE BIRTHS. 59

Table 24 shows the variations in the proportion of plural births of each nativity for the past ten years. The marked increase in the per cent of plural births to native-born parents in 1893 is due chiefly to the general rise in the proportion of children born to native-born parents, owing to the falling off in the births returned from foreign-born parents. The percentage of foreign-born parentage, although low, is slightly higher than for 1892.

Table 24.—*Exhibiting the parent-nativity of plural births* in Michigan for the ten years 1884-93, inclusive.*

Years.	Total.	Native-born.		Foreign-born.		Mixed.		Unknown.	
		Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.
1884.....	912	380	39.5	396	43.4	144	15.8	12	1.3
1885.....	983	384	39.1	414	42.1	155	15.8	30	3.1
1886.....	1,020	419	41.1	407	40.0	176	17.3	18	1.8
1887.....	1,071	448	41.8	423	39.5	188	15.7	32	3.0
1888.....	1,194	485	40.6	530	44.4	159	13.3	20	1.7
1889.....	1,072	410	38.3	486	45.3	172	16.0	4	.4
1890.....	1,561	437	28.0	904	57.9	200	12.8	20	1.3
1891.....	1,375	434	31.6	746	54.3	173	12.6	22	1.6
1892.....	1,132	418	36.9	472	41.7	212	18.7	30	2.7
1893.....	995	397	39.8	418	42.1	150	15.1	30	3.0
Average, 1884-93.....	1,132	419	37.0	520	46.0	171	15.1	22	1.9

* Triplets included.

Table 25.—*Exhibiting the number of illegitimate children born in Michigan in the years 1884-93, inclusive; also the rate of illegitimate births per 1,000 births, and the parent-nativity of the mothers of illegitimates.*

Years.	Illegitimate children.		Mothers of illegitimate children.						
	Number.	To every 1,000 births.	Total.	Native.		Foreign.		Unknown.	
				Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
1884.....	193	4.8	193	103	53.4	69	35.8	21	10.9
1885.....	248	5.9	248	115	46.4	86	34.7	47	18.9
1886.....	300	7.3	300	142	47.3	45	15.0	113	36.7
1887.....	422	9.1	422	151	35.8	72	17.1	199	47.2
1888.....	591	12.1	591	149	25.2	72	12.2	370	62.6
1889.....	421	8.5	419	128	30.1	73	17.4	220	52.5
1890.....	455	8.7	450	148	32.9	73	16.2	229	50.9
1891.....	389	7.7	386	143	37.1	66	17.1	177	45.8
1892.....	405	8.8	405	163	40.2	71	17.5	171	42.2
1893.....	505	10.6	501	223	44.5	111	22.2	167	33.3
Av. 1884-93....	393	8.4	392	146	37.2	74	18.9	171	43.6

In a similar manner the statistics of illegitimacy in the State are compared for ten years past in Table 25. Much variation will be observed from year to year, showing that births of this class are subject to many inaccuracies and irregularities of return. The increase in the proportions both of native-born and foreign-born mothers of illegitimates, appears to be due to greater care in specifying nativity, and a consequent reduction of the ratio of mothers of "unknown" nativity.

DELINQUENT TOWNSHIPS AND TOWNSHIPS REPORTING NO BIRTHS.

The list of townships from which it was reported that no births occurred during the year 1893 is given in Table 26. The aggregate population so returned amounts to 4,650 but it is evident in some cases that the reports are made under a misconception of the duty of the supervisor to secure the facts. Thus in the township of Bruce, Chippewa county, whose supervisor states definitely that "I had no returns of births to make from the township of Bruce. There were none reported to me in May, 1894, for 1893, when I was assessing," it is ascertained from the State census that ten births actually occurred from June to December, 1893, only a part of the registration year.

Table 26.—*List of townships in which it was reported that no births occurred in 1893, showing population in 1894.*

County.	Township.	Popula- tion, 1894.	County.	Township.	Popula- tion, 1894.
Arenac	Turner	31	Ontonagon	Bohemia	172
Cheboygan	Waverly	110		Big Creek	180
Chippewa	Bruce	962	Oscoda	Elmer	351
Crawford	Grove	95		Harmon	183
Iron	Atkinson	568		Gerrish	64
Kalkaska	Oliver	69		Markey	39
Lake	Cherry Valley ..	210	Roscommon	Nester	211
	Webber	88		Richfield	79
Marquette	Turin	143		Roscommon	186
Midland	Greendale	167			
	Foster	136			
	Goodar	172			
Ogemaw	Klackring	360			
	Mills				
Total population reporting no births					4,650

The population of delinquent townships, *i. e.* townships whose supervisors failed to do their duty under the law, or, in some cases, whose returns properly made to the county clerk were not by him transmitted to this Department, is less than in the preceding years. This good showing comes from the early efforts, by personal letters to non-reporting supervisors and requests to county clerks, to urge a prompt return as

required by law, and, lastly, in some cases in which courteous requests were ignored, by appeals to the authority of the law through the prosecuting attorneys of the counties in which the delinquencies occurred. Prompt attention has generally been paid to requests for action by the prosecuting attorneys to whom they were addressed, and the results thereof, have been rapidly forthcoming in most cases. In a few instances noted in the table, the returns have not yet been made, but efforts will be continued to obtain them. Although too late for the present compilation, their legal value, as personal records, requires that the important requirements of the law be not allowed to fail through negligence or unwillingness of officers intrusted with its execution.

Table 27.—*List of townships from which no returns of births were received for 1893, showing population in 1894. (List closed December 1, 1894.)*

County.	Township.	Popula- tion, 1894.	County.	Township.	Popula- tion, 1894.
Alger.....	Munising.....	367	Iosco.....	Barleigh*.....	566
Baraga.....	Covington.....	88	Kalkaska.....	Glade.....	122
	Sugar Island.....	570	Manitou.....	Galilee*.....	82
Chippewa.....	Trout Lake.....	89	Nawaygo.....	Beaver†.....	439
	White Fish.....	430	Ontonagon.....	Interior‡.....	1,623
	Beaver Creek*.....	108	Oscoda.....	Comins†.....	410
Crawford.....	Frederic.....	253	Otsego.....	Bagley§.....	1,023
	Billings.....	122	Roscommon.....	Higgins†.....	716
Gladwin.....	Backeye.....	254	Saginaw.....	Marion§.....	709
	Clement*.....	91	Wayne.....	Sampter†.....	1,516
Total population of delinquent townships.....					9,578

* No statement could be obtained from county clerk as to whether returns were made or not.

† Supervisor states that returns were duly made to county clerk, although none were forwarded by him to this Department, and he claims that none were received by him.

‡ Returns were finally received, after the attention of prosecuting attorney had been called to the delinquency, but too late for compilation in this report.

§ Reported to prosecuting attorneys of the several counties, with request to cause reports to be made according to law, but without result. Births occurred in all of these townships during the year 1893 according to the State census enumeration.

PART III.—MARRIAGES IN MICHIGAN DURING THE YEAR 1893.

The year 1893 showed a marked falling off in the number of marriages returned as compared with the preceding year. There were only 19,197 reported, or 910 less than the number returned for 1892. This number is also 47 less than the number for 1891, but, owing to the increase of population of the State, exceeds the number returned for any previous year. The rates per 1,000 population of persons married in this State for the preceding years of registration may be examined in Table 4, Part I, in which it will be seen that the marriage-rate for the year, 17.4 per 1,000, while low, is by no means extraordinarily so. That for the year 1886 was the same, while 1888 fell slightly below with a rate of 17.3 per 1,000.

The principal reason for this remarkable decrease in the number and rate of marriages in the year 1893, as compared with the years immediately preceding, is not difficult to discover. The marriage-rate is a very sensitive barometer of prosperity. It rises with favorable times and sinks readily under business depression and the increase of poverty. The year 1893 was marked by the prevalence of "hard times" over the entire State, but the severity of the business depression was particularly felt in those portions of the upper peninsula dependent upon the iron mines. The upper peninsula has been characterized by a very high marriage rate and by a great predominance of marriages of foreign-born persons. The marriage-rate in these counties still remains high as compared with other parts of the State, but is much lower than for 1892. Thus Gogebic county showed a rate of 29.9 per 1,000 for 1892 and of only 21.0 per 1,000 for 1893. The actual numbers were 146 for 1893 and 236 for the preceding year, a decrease of 90 in this single county. The loss in marriages in the upper peninsula greatly affected the proportion of marriages of foreign-born persons, of which they were chiefly composed. While there were 218 fewer native-born males married in Michigan in 1893 than in 1892, the diminution of foreign-born males amounted to 688.

In Part I of this report (Table 9) the changes in the number of marriages returned for the two years, 1892 and 1893, from individual counties are considered, and the marriage-rates for each county of the State are also presented and discussed (Table 8). Reference is also made in connection therewith to the unfavorable conditions to which the State has been subjected during the year 1893, and the effects of those circumstances upon the vital movements of the State are noted. In this portion of the report the usual special tables relating to marriages will be presented, with brief discussions of their contents, and in conclusion a valuable article "On the Marriage-rate in Michigan, 1870-90," by Professor Walter F. Willcox, of Cornell University, that recently

appeared in the Quarterly Publications of the American Statistical Association, will be given in full as especially revised by the author for this report. It is gratifying to note that the results of the Michigan system of registration, imperfect as they are in many respects, have yet a certain statistical value, and that so far as marriages are concerned they compare favorably with any system of state registration in this country; the conclusions of Professor Willcox, it is confidently believed, will be regarded with much interest by the readers of this report.

SUMMARY OF THE REGISTRATION OF MARRIAGES IN 1893.

A condensed statement of the principal features of interest in the registration of marriages in Michigan for the year 1893 is herewith presented:

Total number of marriages performed,	19,197
Marriages per 1,000 estimated population,	8.7
Persons married per 1,000 population,	17.4
Decrease of number of marriages registered for the year 1893 (19,197)	
from the number for 1892 (20,107),	910

The largest number of marriages of any month in the year occurred in November, 2,181 or 10.8 per cent; the smallest number was recorded for January, 1,335 or 6.6 per cent.

Of the 19,197 marriages, there were:

Both bridegroom and bride of native birth,	11,134
Both bridegroom and bride of foreign birth,	3,554

Including mixed marriages, i. e. those in which the parties were of different nativities, there were married:

Males of native birth,	13,069
Males of foreign birth,	6,111
Females of native birth,	13,616
Females of foreign birth,	5,079

Of the 38,394 persons married, the following was the distribution according to color:

White,	37,970
Colored (Black, 195; Mulatto, 123; Indian, 106),	424

As to age at marriage, the most important groups were:

Males aged 20 to 24 inclusive,	7,395 or 38.5 per cent.
Males aged 25 to 29 inclusive,	5,753 " 29.9 "
Females aged under 20 years,	5,911 " 30.8 "
Females aged 20 to 24 inclusive,	7,743 " 40.3 "
Average age of native-born males married in 1893,	28.1 years.
Average age of native-born females married in 1893,	23.2 "
Average age of foreign-born males married in 1893,	29.8 "
Average age of foreign-born females married in 1893,	24.8 "
Number of males married below legal age (18 years),	2
Number of females married below legal age (16 years),	12

DELAY OR NEGLECT IN MAKING RETURNS OF MARRIAGES.

It was carefully pointed out in the last registration report how important it is that the law shall be fully complied with by clergymen and others as regards the prompt and complete return of all marriages performed. The active and interested assistance of the county clerks of the State is indispensable for the securing of full returns. While there is not a very large amount of delinquency, some failure to keep the registers of marriages fully written up no doubt exists, and the necessary corrections of imperfect returns and the entry of missing certificates of marriage cannot in all cases be satisfactorily obtained by this Department. This is shown from the fact that of 1,323 cases of licenses reported but no returns of marriages made for 1893, the returns were completed by the county clerks in only 684 instances. While it is a matter of congratulation that the reports of these 684 marriages, some of which may be of the greatest legal importance in future years, were secured through the efforts of this Department, the number concerning which no information was obtainable, 639, is far too large. It does not compare favorably with the showing for the previous year, in which 1,282 delinquent returns were written for, and 978 certificates secured. For the years immediately preceding, it should be noted in making exact comparisons of the marriages registered, that no attempts were made by the State Department, so far as appears, to secure delinquent returns. The result is that the numbers registered for 1889 and 1890 are too low by about five per cent, and the decrease in the marriage-rate in this State for the present registration year would seem to be even greater than the figures given in the reports indicate.

The arrangement and contents of the tables relating to marriages are as follows:

Synopsis of tables relating to marriages.

Table.	Marriages in Michigan, 1893.
28.	Marriages by quarters, 1893, compared with 1891-92, and with the average for ten years, 1883-92.
29.	Marriages by months, 1893, compared with 1891-92, and with the average for ten years, 1883-92. Months arranged in order of number of marriages performed in each.
30.	Marriages by months, 1893,—detailed statement by counties. Color of persons married in Michigan in 1893.
31.	Number and per cent of persons married, by nativity and sex, 1893.
32.	Marriages in Michigan, by nativity, 1893, compared with 1890-91, and quinquennial averages for the periods 1871-75, 1876-80, 1881-85, 1886-90.
33.	The average ages, by nativity, of persons married in Michigan in 1893, compared with 1890-92, and with the mean of ten years, 1883-92.
34.	(a) Marriages by nativity and (b) number of persons married by sex and periods of age in 1893,—detailed statement by counties.
35.	Marriages in 1893, arranged according to the periods of age of bridegrooms and brides.
36.	Number of persons married in Michigan under the legal ages, by sex, during ten years, 1884-93.
37.	Comparison of the per cents of males married at each period of age in 1893, with 1891-92, and with the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.
38.	Comparison of the per cents of females married at each period of age in 1893, with 1891-92, and with the quinquennial periods 1871-75, 1876-80, 1881-85, 1886-90.

MARRIAGES BY MONTHS AND QUARTERS.

The distribution of marriages returned for 1893 through the months and quarters of the year may be seen in Tables 28 and 29. The corresponding figures are given in these tables for the two years preceding, and also the average of the ten year period 1883-92. From a comparison of these with the results for 1893 it will be seen that the year presents many peculiarities. Although the largest number of marriages occurred in the last quarter of the year, the predominance of this quarter is not so great as usual, while the second quarter has a larger proportion of marriages than common. The reason of this change is seen, in Table 29, to be due to the increased proportion of June marriages, while a large decrease obtains in December. This was especially marked in the upper peninsular counties most affected by the closure of the mines in the winter of 1893-94.

It will be noted that the statements given in these tables for the years immediately preceding the years of this report are the same as those presented in the report for 1892. No additions have been made for returns received since the original compilation. The system of continuing the corrections of the marriages for several years subsequent to the date of the original compilation was originated in the early history of these reports before a system of marriage licenses was in operation in this State. While quite embarrassing to persons consulting these reports from the fact that several different statements were liable to be obtained for the same year, such corrections were at that time indispensable, for the delayed returns amounted to several hundred marriages for each year. The requirement of a marriage license, as provided by the law of 1887, has changed all this, and if the custom adopted in the last two reports of adding all the returns for each year found in the first quarter of the subsequent year be adhered to, as well as the practice of writing to the county clerks for all delayed returns, the number of marriages originally compiled for each year may remain unchanged in subsequent reports without appreciable error.

Table 28.—*Marriages by quarters of the year for each of the years 1891-93, and the average for the years 1883-92. Corrected for additional returns up to March 31, 1894.*

Year and quarters.	1891.		1892.		1893.		Average for 10 years, 1883-92.	
	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
Year.....	19,244	100.0	20,107	100.0	19,197	100.0	17,652	100.0
Quarter ending March 31.....	4,131	21.5	4,332	21.5	4,043	21.1	3,817	21.6
Quarter ending June 30.....	4,544	23.6	4,884	24.3	5,006	26.1	4,133	23.4
Quarter ending September 30.....	4,512	23.4	4,619	23.0	4,494	23.4	4,235	24.0
Quarter ending December 31.....	6,056	31.5	6,267	31.2	5,652	29.4	5,468	31.0
Unknown month.....	1		5		2		4	
Average.....	4,811	25.0	5,027	25.0	4,799	25.0	4,418	25.0

VITAL STATISTICS OF MICHIGAN, 1893.

Table 29.—*Marriages by months, in order of number, for the years 1891-93, compared with the averages for the ten years 1883-92. Corrected for additional returns up to March 31, 1894.*

1891.			1892.			1893.			Average for 10 years, 1883-92.		
Months.	Num- ber.	Per cent of total.	Months.	Num- ber.	Per cent of total.	Months.	Num- ber.	Per cent of total.	Months.	Num- ber.	Per cent of total.
Year . . .	19,244	100.0	Year . . .	20,107	100.0	Year . . .	19,197	100.0	Year . . .	17,629	100.0
Dec.	2,036	10.8	Nov.	2,181	10.8	Nov.	2,060	10.7	Nov.	1,857	10.5
Oct.	1,986	10.3	Dec.	2,049	10.2	Oct.	2,018	10.5	Dec.	1,908	10.2
Nov.	1,984	10.3	Oct.	2,087	10.1	June	1,769	9.2	Oct.	1,794	10.2
Sept.	1,749	9.1	Sept.	1,828	9.1	Sept.	1,780	9.0	Sept.	1,624	9.2
April	1,628	8.4	June	1,751	8.7	April	1,663	8.7	April	1,426	8.1
June	1,502	7.8	May	1,590	7.9	May	1,574	8.2	June	1,352	7.7
Jan.	1,466	7.6	April	1,548	7.7	Dec.	1,574	8.2	May	1,349	7.7
May	1,419	7.4	March . . .	1,542	7.7	Jan.	1,452	7.6	July	1,342	7.6
Aug.	1,383	7.2	Feb.	1,455	7.2	July	1,408	7.3	Jan.	1,306	7.4
July	1,380	7.2	Aug.	1,407	7.0	Aug.	1,356	7.1	March . . .	1,306	7.4
March	1,339	6.9	July	1,386	6.9	March	1,318	6.9	Aug.	1,264	7.2
Feb.	1,326	6.9	Jan.	1,335	6.6	Feb.	1,273	6.6	Feb.	1,202	6.8
Unk.	1	-----	Unk.	5	-----	Unk.	2	-----	Unk.	4	-----
Av. *	1,604	8.3	Av. *	1,676	8.3	Av. *	1,599	8.3	Av. *	1,469	8.3

* Average includes unknown month.

The detailed exhibit by counties and months of marriages returned in 1893 is seen in Table 30. To this table is appended as a foot-note a statement of the facts in regard to marriages of colored persons, which has formerly been presented in a special table. The total number of colored marriages is so small, however, that this table consisted mainly of blank spaces, and it is believed that the data can be better examined in the condensed form here given. The number of marriages between persons of different race or color is about the same as in 1892, but the number of persons returned as black is greater, while fewer mulatto and Indian marriages were recorded.

In Table 7, Part I, will be found a comparison of the number of persons married, by color, with the number of colored births and deaths, and with the colored population of the State as given by the last United States census.

MARRIAGES BY COUNTIES AND MONTHS.

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Table 30.—*Distinguishing by counties and by months, the number of marriages returned for the year 1893.*

State and counties.	Year, 1893.	Months, 1893.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
State	19,197	1,452	1,273	1,318	1,663	1,574	1,769	1,408	1,356	1,730	2,018	2,060	1,574	2
Alcona	25	1	1	1	1	-----	2	7	3	1	1	2	5	-----
Alger	12	1	1	-----	-----	2	1	-----	2	1	-----	-----	4	-----
Allegan	332	23	25	32	29	20	21	25	25	27	32	41	32	-----
Alpena	152	7	5	8	13	19	21	10	12	13	11	17	11	-----
Antrim	90	10	3	3	9	13	10	6	3	6	8	11	8	-----
Arenac	49	4	4	5	4	5	5	1	4	4	2	7	4	-----
Baraga	34	3	-----	2	2	2	4	5	2	4	1	4	5	-----
Barry	184	14	14	18	18	10	14	7	18	15	14	29	13	-----
Bay	454	33	36	21	29	44	56	30	30	42	65	45	23	-----
Benzie	75	7	4	2	3	6	6	7	5	6	12	9	8	-----
Berrien	471	35	22	43	34	50	40	34	44	35	51	45	38	-----
Branch	286	15	22	23	23	16	32	10	17	23	36	38	31	-----
Calhoun	433	35	29	36	36	39	40	17	24	43	43	53	38	-----
Cass	206	17	11	15	16	11	16	16	14	23	27	26	14	-----
Charlevoix	98	7	6	11	7	6	4	8	4	12	8	13	12	-----
Cheboygan	109	6	3	5	10	10	10	5	8	12	13	13	14	-----
Chippewa	155	10	10	9	15	5	19	17	15	13	14	15	13	-----
Clare	71	6	8	3	8	9	4	6	4	6	2	6	9	-----
Clinton	253	18	15	17	16	15	15	18	13	30	40	31	25	-----
Crawford	33	2	3	-----	-----	2	6	4	1	1	5	2	7	-----
Delta	173	12	7	3	16	18	20	19	21	15	16	18	8	-----
Dickinson	154	12	14	12	14	15	23	17	13	11	13	6	4	-----
Eaton	295	12	20	22	20	12	19	21	16	34	47	38	34	-----
Emmet	90	7	7	6	7	3	9	4	4	15	8	14	6	-----
Genesee	345	23	27	26	31	28	27	16	20	28	45	44	30	-----
Gladwin	33	2	1	5	5	-----	3	4	1	4	2	4	2	-----
Gogebic	146	21	7	13	18	17	11	12	5	12	14	9	7	-----
G'd Traverse	196	13	15	6	16	19	18	13	20	15	22	16	23	-----
Gratiot	263	12	19	20	25	23	14	25	22	23	23	32	25	-----
Hilledale	305	15	22	40	23	29	24	15	19	24	35	28	31	-----
Houghton	375	20	26	10	28	38	44	28	27	54	47	34	19	-----
Huron	216	21	15	10	24	18	20	10	13	14	25	29	17	-----
Ingham	338	17	15	23	29	27	26	31	27	35	42	37	29	-----

Table 30.—CONTINUED.—*Marriages by counties and months, 1893.*

Counties.	Year, 1893.	Months, 1893.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Ionia.....	323	23	29	31	23	23	26	17	22	29	33	32	35	---
Iosco.....	93	7	4	6	10	5	4	18	7	5	10	10	7	---
Iron.....	27	2	---	4	3	4	4	4	2	3	---	---	1	---
Isabella.....	180	7	13	23	19	12	11	20	15	13	12	13	22	---
Jackson.....	420	28	27	56	38	36	27	34	31	21	46	40	36	---
Kalamazoo.....	412	41	31	28	22	29	50	21	29	30	43	49	39	---
Kalkaska.....	41	1	2	1	3	2	3	3	6	2	10	5	3	---
Kent.....	1,219	97	82	62	126	117	130	109	93	105	113	94	90	1
Keweenaw.....	19	1	2	1	---	---	2	4	2	5	---	---	2	---
Lake.....	54	4	2	5	---	4	6	5	2	7	9	3	7	---
Lapeer.....	223	20	17	28	15	12	7	17	9	27	22	33	26	---
Leelanau.....	73	6	6	3	4	12	5	12	3	6	2	10	4	---
Lenawee.....	451	41	25	44	30	28	40	19	34	34	61	54	41	---
Livingston.....	192	14	19	22	27	10	10	12	12	17	19	17	13	---
Luce.....	22	---	2	2	3	2	2	1	4	1	1	3	1	---
Mackinac.....	67	4	5	2	11	2	7	6	6	6	9	6	3	---
Macomb.....	216	22	19	16	24	12	17	12	15	23	15	22	19	---
Manistee.....	222	19	15	13	21	23	15	18	21	23	5	27	22	---
Manitou.....	4	2	---	---	---	---	---	1	1	---	---	---	---	---
Marquette.....	333	28	20	21	30	31	35	28	28	37	40	27	8	---
Mason.....	152	15	7	8	10	6	15	15	11	10	17	21	17	---
Mecosta.....	186	15	14	12	16	10	11	21	16	9	11	26	25	---
Menominee.....	174	17	5	7	25	16	23	17	11	21	14	14	4	---
Midland.....	110	6	7	10	6	7	10	10	7	11	11	13	12	---
Missaukee.....	59	4	5	2	8	6	4	6	3	6	4	3	8	---
Monroe.....	289	23	23	19	31	29	17	13	15	30	35	41	13	---
Montcalm.....	325	31	24	23	24	24	26	26	19	38	28	28	34	---
Montmorency.....	17	1	---	2	1	1	2	1	---	4	1	2	2	---
Muskegon.....	285	27	13	17	25	29	21	24	20	27	25	25	31	1
Newaygo.....	157	16	9	14	17	14	10	17	7	7	16	14	16	---
Oakland.....	291	21	23	26	22	22	31	16	21	20	28	37	27	---
Oceana.....	141	14	5	13	14	12	16	12	14	12	7	12	10	---
Ogemaw.....	48	5	2	2	9	3	3	2	2	1	8	7	4	---
Ontonagon.....	40	3	4	1	3	4	6	2	5	2	5	3	2	---
Osceola.....	139	12	7	16	10	9	11	18	11	10	9	14	12	---
Oscoda.....	15	---	1	2	4	1	1	---	---	---	1	2	3	---

Table 30.—CONCLUDED.—*Marriages by counties and months, 1893.*

Counties.	Year, 1893.	Months, 1893.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
Otsego.....	55	6	1	4	6	2	5	8	2	3	6	7	5	-----
Ottawa.....	318	16	22	20	23	38	36	19	25	37	29	35	18	-----
Presque Isle...	31	3	3	1	4	2	2	2	5	-----	6	3	-----	-----
Roscommon...	17	-----	-----	1	4	3	3	2	-----	1	1	2	-----	-----
Saginaw.....	676	50	39	39	61	57	67	53	43	70	84	72	41	-----
Sanilac.....	247	16	14	19	28	16	15	14	12	28	22	29	34	-----
Schoolcraft...	73	1	6	6	9	4	7	6	10	7	9	5	3	-----
Shiawassee...	300	16	25	24	25	11	26	14	26	25	37	47	24	-----
St. Clair.....	443	40	40	19	30	46	34	30	27	33	45	57	42	-----
St. Joseph.....	239	19	18	22	18	18	18	12	24	19	25	24	22	-----
Tuscola.....	257	11	20	20	25	15	12	18	23	26	26	34	27	-----
Van Buren.....	254	17	23	23	13	19	20	21	14	23	25	24	32	-----
Washtenaw...	373	31	19	25	41	32	26	21	23	33	48	44	30	-----
Wayne.....	2,297	195	153	93	196	218	295	164	154	211	244	243	131	-----
Wexford.....	134	13	4	10	12	5	11	15	8	11	17	11	17	-----

NOTE TO TABLE 30.—COLOR OF PERSONS MARRIED IN MICHIGAN, 1893.

Out of the total of 19,197 marriages returned as having occurred in Michigan during the year 1893, 18,986 were between persons white in color. There were 102 marriages of blacks, 59 of mulattoes and 52 between Indians. The white marriages constitute 98.89 per cent of the total marriages of all colors, a preponderance so great as to render any detailed study of marriages by color in Michigan of very trivial importance. There were 21 marriages of mixed race, 6 less than the number recorded for the previous year. These are included in the totals, white, black, mulatto, etc., the rule being to classify the marriage according to the color of the groom. When the race is given as "half-breed" or "white and Indian," the case has been included in the number of Indian marriages.

BLACK MARRIAGES.—Total for State, 102. By counties:—Wayne, 30; Washtenaw, 11; Calhoun, 8; Jackson, 7; Berrien, 6; Kalamazoo, Lenawee, each 5; Mecosta, 4; Ingham, Kent, Oakland, Van Buren, each 3; Allegan, Cass, Genesee, St. Joseph, each 2; Bay, Delta, Gratiot, Ionia, Saginaw, Shiawassee, each 1.

MULATTO MARRIAGES.—Total for State, 59. By counties:—Wayne, 24; Cass, 20; Kalamazoo, 5; Kent, 4; Mecosta, 2; Berrien, Calhoun, Montcalm, Saginaw, each 1.

INDIAN MARRIAGES.—Total for State, 52. By counties:—Leelanau, 18; Mackinac, 6; Baraga, 5; Emmet, 4; Calhoun, Charlevoix, Isabella, each 3; Mason, Missaukee, each 2; Antrim, Bay, Berrien, Cheboygan, Manistowick, Schoolcraft, each 1.

MIXED MARRIAGES.—Total for State, 21. Seven white males married colored females, as follows:—Mulatto—Van Buren, 1; Indian—Emmet, 1; half-breed—Chippewa, 3; Alger, Mackinac, each 1. Nine black males married females of other color, as follows:—white—Calhoun, Jackson, Lenawee, Van Buren, each 1; mulatto—Jackson, 2 (1 quadroon); Cass, Delta, Kalamazoo, each 1; one mulatto male married a white female in Wayne county. Two Indian males married white females in Leelanau county, and two half-breeds married white females in Mackinac county.

VITAL STATISTICS OF MICHIGAN, 1893.

NATIVITY OF PERSONS MARRIED.

Table 21 exhibits the number and proportion of the bridegrooms and brides of each nativity married in Michigan in 1893. The per cents of native-born males and females married are higher than usual, owing, no doubt, to the unusual conditions of distress affecting the upper peninsula. The same change is well seen in Table 32, which extends the comparison to the years 1891 and 1892, and also, by five-year periods, to the early years of registration. In this table the decline in the percentage of native-born males married has been continuous for many years back, excepting, of course, minor oscillations for certain years. In 1893 the per cent of marriages of persons both native-born rises to 58.0, a ratio higher than any recorded since 1886, and the proportion of marriages having native-born bridegrooms and foreign-born brides has also risen. Marriages of foreign-born couples and of foreign-born males with native females have fallen correspondingly.

Table 31.—*By nativity, the number and per cent of brides and bridegrooms returned for the year 1893.*

Bridegrooms and brides,—nativity specified.		Brides, 1893.			Bridegrooms, 1893.	
		Native-born.	Foreign-born.	Unknown.	Total of each nativity.	Per cent of each nativity.
Bridegrooms	{ Native-born.....	11,134	1,524	411	13,069	68.1
	{ Foreign-born.....	2,469	3,554	88	6,111	31.8
	{ Unknown.....	13	1	3	17	.1
Brides	{ Total of each nativity.....	13,616	5,079	502	19,197	.....
	{ Per cent of each nativity.....	70.9	26.5	2.6	.....	100.0

Table 32.—*Nativity of marriages in Michigan for the years 1891-93; compared with averages for the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.*

Years and periods averaged.	Nativity of marriages,—Per cents of total.				
	Both native-born.	Both foreign-born.	Foreign groom and native bride.	Native groom and foreign bride.	One or both unknown.
Average, 1871-75.....	59.7	18.5	12.3	7.0	2.6
Average, 1876-80.....	63.2	14.0	13.3	7.4	2.2
Average, 1881-85.....	58.2	19.4	12.4	8.7	1.3
Average, 1886-90.....	56.4	20.3	13.2	8.1	2.0
Year 1891.....	55.7	20.2	13.6	7.8	2.7
Year 1892.....	56.5	20.3	13.0	7.7	2.5
Year 1893.....	58.0	18.5	12.3	7.9	2.7

AVERAGE AGE AT MARRIAGE BY NATIVITY.

Table 33, comparing the ages at marriage of each nativity in 1893 with the years immediately preceding and also with the ten-year period 1883-92, agrees with the preceding tables in indicating a large degree of change for a single year. This variation is chiefly, as might have been expected, in the average ages of foreign-born persons married, both sexes of this class showing an increased age. Hard times have a tendency to delay marriages, while in many cases they prevent them altogether. With a renewal of prosperity the average age curve may be expected to return to its former position, and will very likely show at first a slight variation in the opposite direction, that of diminished average ages.

Table 33.—*The average ages, by nativity, of persons married in Michigan during the year 1892; compared with the corresponding figures for 1890-93 and with the mean of the averages for the ten years 1883-92.*

Nativity of persons married.	1890.		1891.		1892.		1893.		Mean of average ages for 10 years, 1883-92.	
	Males.	Fe-males.	Males.	Fe-males.	Males.	Fe-males.	Males.	Fe-males.	Males.	Fe-males.
All nativities	28.9	24.3	28.5	23.6	28.5	23.7	28.6	23.8	28.5	23.7
Native-born	28.1	22.8	28.0	23.0	28.1	23.2	28.1	23.2	28.0	23.0
Foreign-born	29.3	24.6	29.3	24.7	29.4	24.5	29.8	24.8	29.3	24.6
Unknown	27.0	25.6	29.3	27.3	28.9	27.5	29.7	28.3	29.1	25.2

Table 34 is really a union of two distinct tabular statements. The portion on the left of the central column gives a detailed exhibit for the State and counties of the number of *marriages* of each nativity. That on the right of the central column specifies the number of *persons married*, of each sex and at each age-period, for the year 1893, by counties.

With respect to the distribution of marriages, by nativity, among the counties of the State, very much of interest may be observed. Great differences exist in the relative numbers of native and foreign marriages in the thickly-settled southern part of the lower peninsula, which is slightly affected by immigration, and the rapidly growing communities of northern Michigan. In these latter there has been a great influx of foreigners seeking employment in the mining and lumbering industries, and the records of certain counties show that the purely American population is so small that marriages in which both parties are native-born are quite exceptional.

In Dickinson county the marriages of foreign-born couples numbered 114, while those of native-born couples were only 21. In Gogebic county the numbers of foreign and native marriages were 122 and 7, respectively; in Houghton, 216 and 74; in Marquette, 180 and 70.

On the other hand Allegan shows 280 native couples to only 9 foreign; Berrien, 350 to 38; Calhoun, 335 to 20; Clinton, 208 to 1; Eaton, 267 to 1; Genesee, 266 to 15; Hillsdale, 254 to 1; Ingham, 257 to 25; Ionia, 255 to 6; Lenawee, 369 to 15; Monroe, 229 to 14; Oakland, 215 to 10; Shiawassee, 236 to 12; St. Joseph, 214 to 3 and Van Buren, 228 to 1.

In two large counties, Branch and Cass, no purely foreign marriages were recorded for the year. The marriages of native couples in these counties were 257 and 174, respectively.

MARRIAGES BY COUNTIES, NATIVITY AND PERIODS OF AGE. 73

Barry	184	149	5	13	10	4	2	1			Males	10	71	88	22	11	6	6	7	7	3	8
											Females	60	66	19	12	5	5	4	4	3	1	
Bay	484	174	119	82	65	7	6	1			Males	10	161	154	53	34	23	4	12	1	2	
											Females	140	132	67	35	11	10	3	5	1		
Benzie	75	45	11	13	6						Males	1	22	34	7	4	4		2		1	
											Females	41	19	6	3	4		1	1			
Berrien	471	350	38	39	23	16	3	2			Males	13	180	132	62	34	16	13	9	3	6	3
											Females	145	100	66	30	16	10	8	2	1	2	1
Branch	286	237		15	4	10					Males	8	114	67	35	14	15	10	4	4	6	2
											Females	100	95	29	28	10	12	6	1	6	2	3
Calhoun	433	335	20	39	21	16	2				Males	9	161	120	63	30	15	14	7	4	4	2
											Females	127	164	68	36	20	11	9	3	3		2
Case	206	174		10	6	16					Males	6	92	54	15	13	8	5	3	6	1	2
											Females	70	76	23	14	6		4	4	2	1	1
Charlevoix	98	59	16	11	12						Males	2	39	23	14	4	3	5	2	1	4	1
											Females	28	32	9	8	2	5	1	1		2	
Cheboygan	109	35	21	17	15	8	3				Males	2	43	34	13	2	1	5	3		1	
											Females	43	46	12	2	3	1		1		1	
Chippewa	155	23	96	13	19						Males	1	47	55	29	12	6	2	1	2		
											Females	43	60	29	8	6	4					
Clare	71	36	11	13	10			1			Males	1	33	20	7	5	2		1		1	1
											Females	32	24	9	3	1	1					
Clinton	263	203	1	13	15	11					Males	8	105	69	23	10	12	1	8	4	7	3
											Females	85	101	24	14	10	6	3	5		1	2
Crawford	33	14	7	7	5						Males	1	15	6	5	3	1	1	1			1
											Females	15	10		2	2	3	1				
Delta	173	47	35	29	11	1					Males		55	69	33	7	2	6		1		
											Females	54	76	23	10	8	2					

MARRIAGES BY COUNTIES, NATIVITY AND PERIODS OF AGE. 77

Mason.....	152	86	41	17	8							{Males.....}	2	64	25	24	13	6	2	2	2	1	1	
												{Females.....}	51	47	26	6	8	7	5			1		
Mecosta.....	186	118	19	24	16	7	2					{Males.....}	1	76	57	19	13	6	2	3		2	2	
												{Females.....}	74	60	23	14	9	2			2	1	1	
Menominee.....	174	29	99	28	14	2	2					{Males.....}	2	68	65	22	7	4	5		1			
												{Females.....}	58	75	26	5	8	2						
Midland.....	110	61	19	17	13							{Males.....}	2	44	23	13	9	7	5	1	1			
												{Females.....}	53	34	6	6	8	2		1				
Missaukee.....	59	30	9	13	5	1	1					{Males.....}	2	23	15	4	6	2	2	3	1		1	
												{Females.....}	26	14	9	4	2		4					
Monroe.....	239	229	14	23	11	7						{Males.....}	6	115	36	39	16	6	6	5	3	3	1	
												{Females.....}	89	714	43	14	11	4	2	3	2	2		
Montcalm.....	325	234	22	35	19	11	3	1				{Males.....}	12	143	73	32	20	8	8	5	11	5	2	3
												{Females.....}	140	111	33	6	8	5	10	3	2	1		1
Montmorency.....	17	4	7	3	2		1					{Males.....}		5	4	5	1	1		1				
												{Females.....}	4	10	1	1		1						
Muskegon.....	255	152	76	37	18	2						{Males.....}	3	100	73	45	23	14	10	1	5	4	1	1
												{Females.....}	93	113	23	13	9	5	4	2				
Newaygo.....	157	111	18	17	7	4						{Males.....}	1	73	31	21	12	3	5	2	4	2	3	
												{Females.....}	64	56	10	7	5	1	3	2	1	1	2	
Oakland.....	294	215	10	32	26	10	1					{Males.....}	8	106	91	37	16	7	3	7	7	4	1	3
												{Females.....}	74	127	46	21	6	4	4	7	3	2		
Oceana.....	141	110	10	15	4	2						{Males.....}	5	45	43	18	7	6	5	4	4	2	1	1
												{Females.....}	48	49	14	12	6	3	3	3	2		1	
Ogemaw.....	43	21	13	11	3							{Males.....}	2	13	16	5	4	1	2					
												{Females.....}	24	17	3	2	1	1						
Ontonagon.....	40	24	8	6	2							{Males.....}	14	7	14	3	1	1						
												{Females.....}	18	10	5	5	2							

Table 35 shows some interesting facts in regard to the number of marriages at different periods of age of the contracting parties. Beginning with the left upper corner of the body of the table, and reading down the vertical columns, we see that 319 females under 20 years of age married males under 20; 3,559 females under 20 married males aged from 20 to 25 years, etc. The total number of females married under 20 years of age was 5,911, which number was 30.8 per cent of all females married. The corresponding facts in regard to males of each age may be noted by reading the horizontal lines of the table. The largest number of marriages took place between males aged from 20 to 25 and females aged less than 20 years. The next largest group is that of males aged 20 to 25 and females of the same period of age. From these groups the numbers become less, gradually for males, more abruptly for females, with advancing years.

Table 35.—*Exhibiting the number of each sex, at each period of age, married during the year 1893, and the per cent of brides and bridegrooms at each period of age to total of all ages.*

Ages of males, 1893.	Ages of females, 1893.															Total males.	Per cent of grooms at each age.
	Under 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.		
Under 20	319	59	8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	386	2.0
20 to 25	3,559	3,432	345	48	8	2	-----	-----	-----	-----	-----	-----	-----	-----	1	7,395	38.5
25 to 30	1,523	2,820	1,175	182	38	8	2	1	-----	-----	-----	-----	-----	-----	4	5,753	29.9
30 to 35	359	970	677	373	78	11	5	2	-----	-----	-----	-----	-----	-----	1	2,476	12.9
35 to 40	106	293	327	237	159	43	15	3	2	-----	-----	-----	-----	-----	1	1,186	6.2
40 to 45	23	100	108	141	107	88	27	14	1	-----	-----	-----	-----	-----	-----	609	3.2
45 to 50	7	40	51	80	108	64	51	22	3	4	-----	-----	-----	-----	1	431	2.2
50 to 55	5	17	27	43	47	51	57	40	12	7	1	-----	-----	-----	-----	307	1.6
55 to 60	4	4	10	18	26	45	56	39	31	8	5	-----	-----	-----	1	247	1.3
60 to 65	4	5	2	12	14	26	32	39	29	28	4	3	-----	-----	-----	198	1.0
65 to 70	2	-----	3	3	6	8	17	24	22	17	10	1	-----	-----	-----	113	.6
70 to 75	-----	2	-----	1	4	3	5	9	6	11	13	7	-----	-----	1	62	.3
75 to 80	-----	1	-----	-----	2	-----	3	4	2	7	3	3	1	-----	-----	26	.1
80 and over	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	2	2	2	-----	-----	7	-----
Unknown	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
Total females	5,911	7,743	2,733	1,138	597	350	270	197	108	83	38	16	3	-----	10	19,197	-----
Per cent of brides at each age..)	30.8	40.3	14.2	5.9	3.1	1.8	1.4	1.0	.6	.4	.2	.1	-----	-----	-----	-----	-----

MARRIAGES UNDER THE LEGAL AGES IN MICHIGAN.

Two males and twelve females were married in Michigan during the year 1893, according to the returns, at ages below the legal limits. These ages are for males eighteen years, and for females sixteen years. The marriage license system, which went into operation in 1887, had a very beneficial influence in checking the number of marriages annually returned below the legal ages. This is apparent from an inspection of Table 36, wherein may be seen the number of males and females married at each age below the legal limits, for each of the last ten years. It is, of course, true that fraudulent representations are made in some cases to the county clerks respecting the ages of persons desiring to be married, but it seems likely that the remarkable decrease in the number of illegally early marriages is due in great part to more careful compliance with the law.

Of the two males married below legal age in 1893, one, aged sixteen years, was married in Huron county; the other, seventeen years of age, was married in Lake county. Ten of the twelve females were fifteen years of age at the time of marriage. They were distributed through the State as follows: Lake county, 4; Ingham, 2; Arenac, Kent, Menominee and Sanilac, each 1. The two females married at fourteen years of age were returned from Gladwin and Iosco counties. All, males and females, were of native birth except the females returned from Iosco and Sanilac counties. The large number returned from Lake county suggests the necessity of more careful compliance with the law in regard to the issuance of licenses by county clerks. They should not be granted when either of the parties applying therefor is below the legal age.

Table 36.—Persons married in Michigan under the legal ages, 1884-93.

Years.	Total males.	Ages of males under 18 years.			Total females	Ages of females under 16 years.			
		15	16	17		12	13	14	15
1884.....	6		1	5	123		5	20	98
1885.....	8	1	2	5	147	1	4	21	121
1886.....	7		1	6	126	1	3	21	101
1887.....	6		1	5	97		2	19	76
1888.....					26			5	21
1889.....					19	1			18
1890.....					12			2	10
1891.....	2		1	1	10		1		9
1892.....	1			1	11			1	10
1893.....	2		1	1	12			2	10
Total ten years, 1884-93.....	32	1	7	24	589	3	15	91	474

In Tables 37 and 38 the proportions of each sex married at certain age-periods during the year 1893 may be seen, and comparisons made with the years 1891 and 1892 and with the preceding years of registration by means of quinquennial averages. The showing for the year 1893 is somewhat reactionary in character owing to the decrease of foreign marriages and the consequent reversion of the returns to the earlier

characters impressed upon them by the native-born population. This is shown especially by the increase in the percentage of males married under twenty years of age, and the decrease of those married from 25 to 30 years of age. A somewhat fuller discussion of the significance of the facts presented by these tables was given in the last report (p. 99), to which reference may be made.

Table 37.—*Percentages of males married in Michigan, at specified periods of age, for the years 1891-93; compared with averages for the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.*

Years and periods averaged.	Ages of males, by periods of years, married 1871-98.														
	Under 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	Over 80.	Unknown.
Average, 1871-75..	2.6	41.2	29.5	10.6	5.5	3.3	2.3	1.7	1.0	.8	.5	.3	.1	---	.6
Average, 1876-80..	2.6	40.8	29.8	10.8	5.6	3.2	2.2	1.6	1.1	.8	.5	.3	.1	---	.5
Average, 1881-85..	2.3	39.5	30.7	11.4	5.7	3.2	2.2	1.6	1.0	.9	.5	.3	.1	---	.4
Average, 1886-90..	2.1	37.7	32.4	12.2	5.7	3.0	2.4	1.5	1.1	.8	.6	.3	.1	---	.1
Year 1891.....	1.7	38.9	31.3	12.4	5.5	3.2	2.3	1.6	1.2	.7	.6	.3	.1	---	---
Year 1892.....	1.9	38.5	30.9	12.8	5.7	3.2	2.3	1.6	1.0	.9	.7	.4	.1	---	---
Year 1893.....	2.0	38.5	29.9	12.9	6.2	3.2	2.2	1.6	1.3	1.0	.8	.3	.1	---	---

Table 38.—*Percentages of females married in Michigan, at specified periods of age, for the years 1891-93; compared with averages for the quinquennial periods, 1871-75, 1876-80, 1881-85, 1886-90.*

Years and periods averaged.	Ages of females, by periods of years, married 1871-93.														
	Under 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.
Average, 1871-75..	36.9	36.5	12.7	5.0	3.0	2.0	1.3	.8	.5	.3	.2	---	---	---	.9
Average, 1876-80..	37.4	37.4	11.7	4.7	3.1	1.9	1.3	.8	.5	.3	.2	---	---	---	.7
Average, 1881-85..	33.8	38.7	13.7	4.9	3.1	1.9	1.3	.8	.5	.3	.2	.1	---	---	.6
Average, 1886-90..	32.8	39.5	14.2	5.2	2.9	1.9	1.3	.9	.6	.4	.2	.1	---	---	.2
Year 1891.....	31.0	41.7	13.6	5.3	2.8	1.9	1.3	1.0	.6	.4	.2	.1	---	---	.1
Year 1892.....	30.9	41.2	14.1	5.2	2.9	2.0	1.3	.9	.6	.5	.2	.1	---	---	.1
Year 1893.....	30.8	40.3	14.2	5.9	3.1	1.8	1.4	1.0	.6	.4	.2	.1	---	---	---

In the study of any question the opinions of an impartial trained observer may be considered to possess very great value. There appeared in the Quarterly Publications of the American Statistical Association, for March, June, 1894, a very interesting discussion of the marriage-rates in Michigan from 1870 to 1890, according to the State registration system, by Professor Walter F. Willcox of Cornell University. With the author's permission and also that of the Secretary of the American Statistical Association, the entire article is herewith presented.

THE MARRIAGE-RATE IN MICHIGAN, 1870-1890.

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The term marriage-rate is applied to a means of measuring and expressing in figures the strength of the social tendency or desire to marry, so far as that tendency finds realization in marriage. All exact science must be based on counting and measuring. Political economy is more exact than other social sciences, largely because price is so good a measure of the intensity of economic desires. "Money . . . is the center around which economic science clusters . . . because in this world of ours it is the one convenient means of measuring human motive on a large scale" (Marshall, *Principles of Economics*, 2d ed., p. 76). The extent and intensity of a community's desire for shoes are approximately measured by the number taken and the price paid. Political economy has usually given greater attention to price, and laid less emphasis on the number sold in proportion to the population,—that is, it has analyzed the *intensity* of an economic demand more carefully than its *extent*, and naturally so, because in the recorded fluctuations of price the materials for such an analysis were afforded. But how is a social desire like that for marriage to be measured? Clearly, no means for measuring its intensity are available. The sacrifice involved as a price cannot be measured in money. But in its other aspect, its extent, the strength of the social desire to marry may be measured by finding the proportion of the community who yield to it in a certain length of time, usually a year, and this measure of the marriage tendency is given by the marriage-rate. The marriage-rate, then, is a means of measuring the extent of the social tendency to marry. If we assume the strength of this tendency to remain approximately constant, as it usually does in a large population, and for periods of a few years, the number of marriages will vary with the varying strength of all the social and economic forces that in civilized communities tend to counteract the tendency to marry, and thus the variations in the rate themselves become measures of the variations in the strength of these counteracting influences.

But how is this measuring done? If we knew that in one community 98 per cent of the population buy at least one pair of shoes every year, and in another community only 85 per cent do so, the knowledge might lead to interesting inferences regarding one phase of the economic condition of the two communities. But the sales of shoes and the names of the purchasers are not registered, so that the records from which this knowledge might be obtained do not exist. On the other hand, we may compute from existing records what proportion of the community each year gratifies the desire for marriage. To do this three methods of varying degrees of accuracy are employed. The number of marriages, or of persons marrying, may be compared, first, with the total population, or, secondly, with the total population of marriageable age, or, thirdly, with the total unmarried population of marriageable age. The general principle is that, in measuring the extent of any social phenomenon, a comparison should be made between the number of cases in which the phenomenon occurs, and the number in which it might occur, *i. e.* compare the actual cases with the possible. Now it is illegal for children to marry, and for persons with a wife or husband living to marry again. Hence these classes should, if practicable, be disregarded in making the comparison. If the question is asked, When is a marriageable age reached? the answer is not easy. As a matter of fact, in those states where the age of the parties is given we find that in

a year there are seldom a score of girls who marry under fifteen, and no more boys who marry under eighteen. Hence, it would be best to fix these as the lower limits, but the difficulties of the problem would be so much increased by the complication of assuming different ages for the two sexes that it is more common to take fifteen as the age at which a person of either sex becomes marriageable. As the number of marriages must be compared with the population of the same year, it becomes necessary to estimate the latter for the years in which no census was taken. The method of estimation used in this article is that of assuming that the amount of increase, and not its rate, was the same for each year. This simple method will give results sufficiently accurate for the matter in hand. Fortunately, Michigan is among the very few states in which all three methods above indicated are possible. The national and State censuses give the total population in 1870, 1874, 1880, 1884, and 1890, and in each census, except that of 1874, the population over fifteen is also given. On the other hand, the censuses of 1874, 1884, and 1890 give the number of persons married, and so make the last method available. The results are contained in Table I on the next page.

In considering this table it is necessary to ask how completely marriages are recorded in Michigan, for on the accuracy of the figures given in the second column depends the trustworthiness of all subsequent inferences. The question comes home with especial force to anyone who knows how unusual it is to find in the United States a trustworthy record of marriages covering a score of years.

Michigan, however, is one of the few states in this country in which the number of marriages has been reported for some years with approximate accuracy. In the "Report on Marriage and Divorce in the United States, 1867-1886," issued by the national department of labor, three groups of states are by implication recognized, one in which the number of marriages has been given for the whole period with practical completeness, including Vermont, Massachusetts, Rhode Island, Connecticut, Ohio, and the District of Columbia; a second in which the statistics of marriage are at present fairly perfect, including New Hampshire, New Jersey, Delaware, Maryland, Illinois, Michigan, Wisconsin, Minnesota and Kansas; and a third including the other states and territories in which the marriage records are either entirely lacking or so imperfect and fragmentary that they have not been carried out in the state totals. For the first years after the civil war the figures for Michigan were very imperfect, but since 1870 they have been comparatively good. The student, however, must be warned against accepting the figures given for each year in the *Michigan Registration Report* of the same year, and followed in the national report. These figures are usually enlarged in later volumes by the inclusion of delayed returns. For example, in the *Michigan Registration Report* for 1884, the number of marriages in that year is given as 15,002. But in the report for 1885 the number of marriages in 1884, corrected for additional returns, is given as 15,721; in the report for 1886 it stands as 15,863; and in the next report the number appears in its final form as 15,989. By taking the number for each year as it appears after the final correction, a column of figures representing the marriages in each year is obtained which differ widely from the series as first printed. But in doing this one is occasionally baffled by finding that the same volume of the *Registration Report* may present contradictions that are irreconcilable, giving the same datum differently on different pages. (Compare the table marked Exhibit A with Table 30 in several recent volumes.) These corrections made in the later reports, and the modifications they introduce, were first carefully examined by Mr. C. M. Rippey, in an editorial printed some months since in the *Detroit Tribune*, and his tabu-

lation of the marriages and computation of the marriage rates are followed in the table above.* In some cases his figures are open to question, as elsewhere contradicted in the volume from which he has taken them, but in the main these variations are slight.

Let it be granted that the corrected figures he gives represent truly, and without omissions, all the marriage ceremonies that have been solemnized in Michigan. A foreign student, or even a native not familiar with our law, would be in danger of leaping to the conclusion that they include all the marriages. In studying our marriage rates, however, it must be borne in mind that in few of our states is any ceremony necessary to constitute a marriage, and in this respect Michigan agrees with the majority. For example, in a case decided in 1884, Chief Justice Cooley of Michigan, said, "An actual ceremony of marriage is not essential to the establishment of the relation of husband and wife; it is sufficient that a man and woman, of due competency, and in respect to whom no impediment exists, consent to take each other as husband and wife, and actually cohabit as such." (*Peet vs. Peet*, 52 Mich., 467.) It is impossible to judge how many "common law" marriages are contracted in Michigan without ceremony or registration, and whether the number is increasing or decreasing, but in studying the question their possibility should be remembered.

The third column in Table I, taken from Mr. Rippey's article before cited, illustrates the first method of computing the marriage rate; the fourth and fifth columns illustrate the other and better methods. If the question be asked, Has the marriage rate of Michigan increased or decreased during the past twenty years? the answer given by the first method is, there has been an increase of .61, or about $7\frac{1}{2}$ per cent; the answer by the second method is, there has been practically no change, a decrease of .04 or .3 per cent; while the answer by the last and most accurate method is, there has been a decrease of 3.4, or about $9\frac{1}{2}$ per cent. At first glance these discrepant results may seem puzzling and inexplicable, but they are easily reconciled. In the first place the proportion of children in Michigan has been decreasing, and the proportion of persons over fifteen increasing. In 1870 the per cent of persons over fifteen was 61.9; in 1880 it was 64.7; in 1884, 65.5; and in 1890, 66.8. The population of marriageable age has thus increased considerably faster than the total population, and while the marriages increased somewhat faster than the total population, they have only just kept pace with the increase of population of marriageable age. But the number of unmarried persons over fifteen, including the widowed and divorced, has increased with yet greater rapidity. In 1874, of the population over fifteen, 38.6 per cent were unmarried; in 1884 there were 39.2 per cent unmarried, and in 1890 the percentage was 40.1. So that the increase in the number of marriages has failed to keep pace with the increase in the number of marriageable persons, and hence the last column shows a decrease. We may conclude, then, that the marriage rate of Michigan has decreased about 9 per cent between 1870 and 1890. This general change and the annual fluctuations are brought more clearly before the eye by Diagram I, which graphically represents Table I.

* Since this article was first published a table has appeared (Michigan Registration Report, 1892, p. 7), giving the corrected number of marriages in Michigan for each year since registration began. Where it differs from the number of marriages stated by Mr. Rippey, this table is probably more accurate, but its differences are few and unimportant. The most significant is an increase of 87 in the number of marriages reported for 1890. Even this change, however, would only raise the rates for 1890 by about one-half per cent, or to 8.91, 13.34 and 23.3, and slightly modify the changes between 1870 and 1890, as found by each method to +.65, +.03 and -3.2. Since this difference, which is nearly as great as all the other four combined, produces so slight an alteration in the result, the table and article have not been reconstructed in the light of these variations.

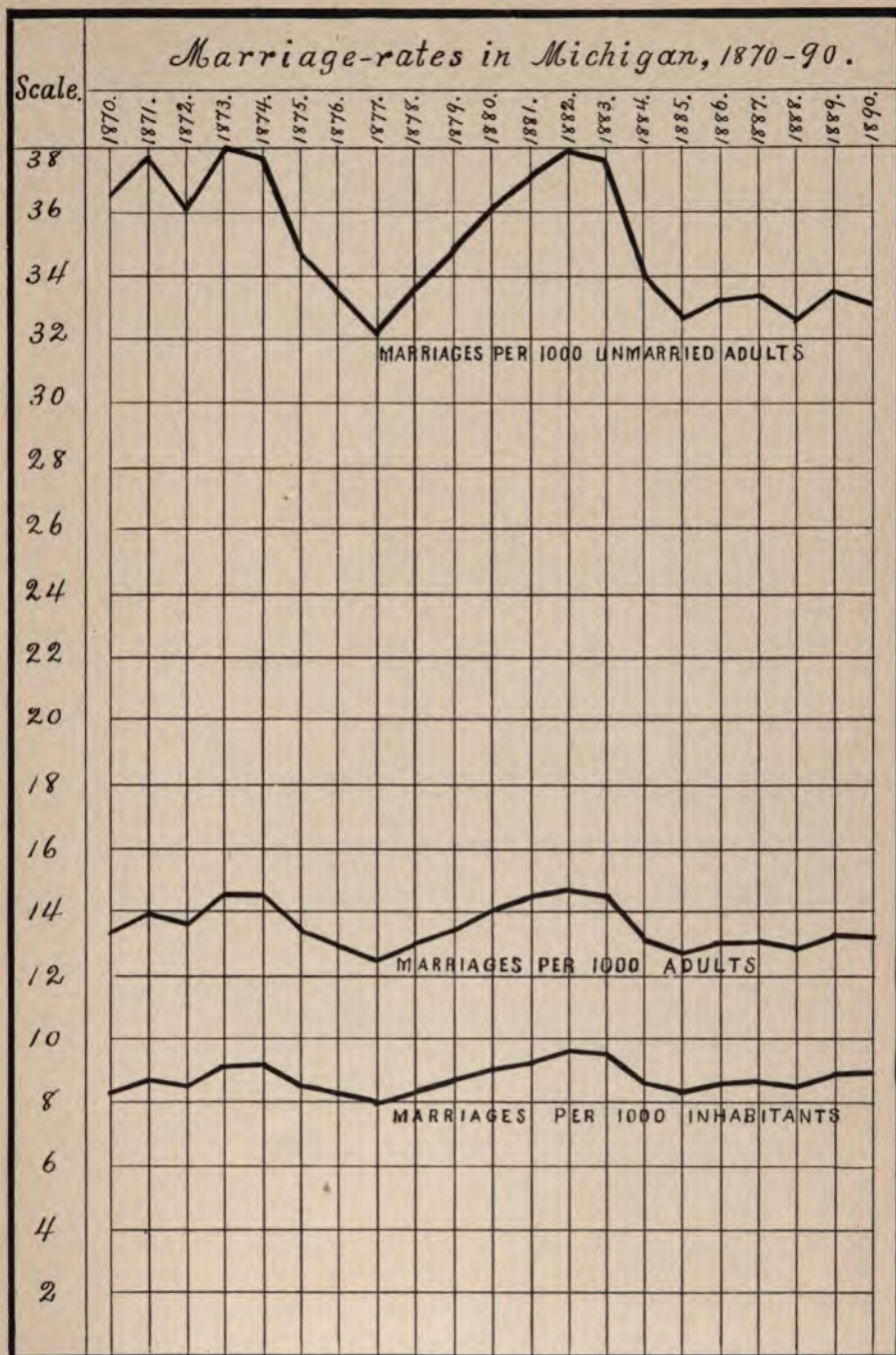
The effect of the hard times in decreasing the marriage-rate may easily be traced in the decline from 1874 to 1877. The depression apparently affected a manufacturing state like Massachusetts earlier and more powerfully than it did an agricultural state like Michigan, for in Massachusetts the sharp decline began in 1874, the year in which Michigan reached its maximum, and continued till 1879, while in Michigan the lowest point was reached two years earlier. In Massachusetts the total fall was 29 per cent of the maximum rate, while in Michigan it was only 13 per cent, less than one-half as great. In 1885 a second minimum, also probably due to business depression, may be noted in Michigan as in Massachusetts and elsewhere.

Table I.—*Michigan marriage-rate, 1870-1890.**

1 Years.	2 Number of marriages.	3 Marriages to 1,000 people.	4 Marriages to 1,000 people over 15.	5 Marriages to 1,000 unmarried people over 15.
1870.....	9,791	8.26	13.31	36.5
1871.....	10,605	8.68	13.91	37.7
1872.....	10,752	8.53	13.61	36.0
1873.....	11,897	9.17	14.56	38.0
1874.....	12,289	9.21	14.55	37.6
1875.....	11,879	8.57	13.49	34.8
1876.....	11,913	8.80	13.00	33.5
1877.....	11,899	8.00	12.50	32.1
1878.....	12,880	8.88	13.03	33.5
1879.....	12,892	8.75	12.56	34.8
1880.....	14,935	9.12	14.08	36.1
1881.....	15,894	9.38	14.45	37.1
1882.....	16,796	9.62	14.75	37.9
1883.....	17,174	9.54	14.58	37.6
1884.....	15,989	8.62	13.14	33.9
1885.....	15,885	8.38	12.73	32.6
1886.....	16,665	8.61	13.05	33.2
1887.....	17,179	8.70	13.14	33.3
1888.....	17,297	8.58	12.91	32.6
1889.....	18,316	8.91	13.38	33.5
1890.....	18,577	8.87	13.27	33.1
Change.....		+ .61	— .04	— 3.4

* In the preparation of the tables for this article I have been aided by Mr. F. S. Crum, a graduate student at Cornell, and member of the class in social statistics.

DIAGRAM I.—THE MARRIAGE CURVES IN MICHIGAN FOR TWENTY-ONE YEARS, 1870-90.



See Table I on opposite page.

It has been shown that the marriage-rate of Michigan has decreased. This may be due merely to postponement of marriage to a later period of life rather than greater abstinence from it, and Mr. Rippey, in the editorial already cited, is inclined to explain the decrease in that way. He points out that between 1874 and 1890 the average age of grooms increased .78 of a year (from 28.07 to 28.85), and the average age of brides increased 3.11 years (from 21.19 to 24.30). One may be inclined to accept the statement that marriage is contracted later in life, and yet question whether the above facts, apparently conclusive as they are, prove it or give any measure of the postponement of marriage. For in obtaining these averages all second and subsequent marriages have been included. The important question is, at what age is marriage contracted for the first time? But, it will be said in reply, the proportion of second or later marriages has probably remained about the same, and so the error is a constant one. Quite the contrary. The average age of the citizens of Michigan has been increasing, and thus the proportion of widows and widowers has risen. For example, between 1874 and 1890 the total population increased 57 per cent, but the number of widows and divorced women meantime increased 88 per cent. It is impossible, therefore, to derive from the Michigan records any clue to the average age at which marriage is first entered by either sex, and *a fortiori* any measure of the postponement of marriage which has almost certainly been in progress. It is much to be desired that the State authorities would follow the example of Massachusetts and Rhode Island, and give us tables in which marriages are grouped into those between bachelors and maids, bachelors and widows or divorced women, widowers or divorced men and maids, widowers or divorced men and widows or divorced women, with distinction of age groups for each sex in each case.

The above are all the conclusions that I have been able to derive from a study of the rates of marriage in Michigan year by year. Before closing, however, it may be interesting and valuable to institute some comparisons between the proportion of persons of each sex married in Michigan and in other regions. The facts in regard to Michigan have been kindly furnished me, in advance of their publication, by Dr. J. S. Billings, in charge of this division of the Eleventh Census. The only state giving approximately comparative facts in its own census is Rhode Island, and for further comparison I have included England and Wales.

Table II.—Number of married men to 1,000 of each age group.

1 Ages.	2 Michigan, 1890.	3 Rhode Island, 1885.	4 England and Wales, 1881.
15-19.....	2	7	5
20-24.....	159	174	221
25-34.....	624	588	669
35-44.....	886	800	826
45-54.....	870	?	849
55-64.....	855	?	779
65+.....	727	?	587

The above should be read as follows: Among every thousand young men in Michigan, in 1890, between the ages of fifteen and twenty, two were married, etc. It appears from the table that the probability of a young man's marrying before he is twenty is over twice as great in England, and over three times as great in Rhode Island, as it is in Michigan. Between twenty and twenty-five, also, the likelihood of marriage among men is greater in England or Rhode Island than in Michigan. Between twenty-five and thirty-five there are more married men in Michigan than in Rhode Island, but fewer than in England, while after thirty-five the proportion of married men is greater in Michigan. One would naturally suppose that in a relatively new state like Michigan the means to support a family would be obtained earlier in life, and more easily than in densely settled communities, and, hence, that marriages would occur earlier, and in greater numbers. It seems probable, however, that the better economic conditions are more than counterbalanced during the earlier periods by the fact that women are still in a minority in Michigan, while in Rhode Island and Massachusetts they largely outnumber the men. The excess of men in Michigan in 1890 is shown by the following table:

Table III.—Persons of each sex in 10,000 of each age group.

1 Ages.	2 Males in 10,000.	3 Females in 10,000.	4 Difference.
15-19.....	5,003	4,907	8
20-24.....	5,196	4,864	272
25-34.....	5,343	4,657	686
35-44.....	5,412	4,588	834
45-54.....	5,347	4,653	694
55-64.....	5,865	4,635	730
65+.....	5,420	4,580	840

If every woman in Michigan were to marry, and to marry a man of the same age group as herself, the number of men that would remain unmarried in 10,000 persons of each age group is indicated in the last column, and, although men do marry women on the average several years younger, yet the result must be the same, and a man's likelihood of finding a wife be somewhat less in a state like Michigan than in one where the difference is on the other side, as it is in Rhode Island. If this explanation be correct, one would surmise that the combination of better economic conditions and the excess of men in Michigan would make the proportion of married women in that state considerably greater than in Rhode Island, or in England. The table below will show that the anticipation is in accordance with the facts.

Table IV.—*Number of married women to 1,000 of each age group.*

1 Ages.	2 Michigan, 1890.	3 Rhode Island, 1885.	4 England and Wales, 1881.
15-19.....	90	49	25
20-24.....	496	315	331
25-34.....	314	633	681
35-44.....	578	738	765
45-54.....	329	?	711
55-64.....	706	?	581
65+.....	422	?	326

From the above it appears that the likelihood of a girl's marrying before she is twenty is not far from twice as great in Michigan as in Rhode Island, and over three and a half times as great as in England. Between twenty and twenty-five about three women are married in Michigan for every two in Rhode Island or England, and for the later periods the proportion of women married exceeds that in England by from 15 to 30 per cent.

The same difference between Michigan and England may be brought out in another way by comparing, not the number of persons reported as married in the census, but the marriage-rates for two years. Unfortunately, I cannot choose the same year, but am obliged to compare, as above, the figures for 1881 in England with those for 1890 here.

Table V.—*Marriage-rate of the sexes by age groups (number marrying in 1,000 unmarried).*

1 Ages.	Males.		Females.	
	2 Michigan, 1890.	3 England, 1881.	4 Michigan, 1890.	5 England, 1881.
15-19.....	3	5	62	22
20-24.....	82	93	154	122
25-34.....	120	110	123	84
35-44.....	75	63	60	33
45-54.....	53	38	30	14
55-64.....	40	22	10	5
65+.....	13	5	2	0.6

Here again much the same results appear. Up to twenty-five, men in England marry in larger proportions than in Michigan, but after that age the rate in Michigan is greater. The difference shown in the period between twenty-five and thirty-five, by the two methods, may be due either to the difference in the years compared or to accidental causes. On the other hand, the marriage-rate of women in Michigan is uniformly and considerably higher than it is in England. In the light of these facts a social reformer, if animated by the belief that marriage should be the goal of a woman's ambition, might apply the doctrine of Horace Greeley to the fairer sex, and urge them to emigrate westward if they would cure their social ills. But a scientific student knows that the tendency of almost every migration to a new country is to bring about a partial and temporary separation of the sexes, and that the interplay of natural and social forces gradually restores an approximate equality of numbers.

PART IV.—DEATHS IN MICHIGAN DURING THE YEAR 1893.

A larger number of deaths, 21,982, was registered for 1893 than for any preceding year of registration with the exception of 1891. Making allowance, however, for increase of population, the death-rate, 10.0 per 1,000, is the same as that for the preceding year, and is less than the rates for the years 1890 and 1891. It is scarcely necessary to observe that the returns upon which such extremely low death-rates are based are very imperfect; they would require to be increased, it is estimated, by at least 60 per cent to give approximately correct rates. For this reason any exact comparisons of the figures given in this portion of the report as expressing the rates of mortality from all causes and from specified diseases to population, with the corresponding rates of states and countries having accurate systems of registration, are inadmissible. Such comparisons may be made with the corresponding rates for Michigan given in these reports for preceding years with little risk of serious error, the assumption probably holding good that the percentage of omissions varies little from year to year.

There are few characters of special interest attaching to the mortality recorded for 1893. Influenza (grippe) prevailed as an epidemic for the fifth consecutive year, but with diminishing violence. Five hundred and fifty-five deaths were recorded from this cause in 1893, as compared with 907 in 1892, 1,076 in 1891, 1,084 in 1890 and 176 in 1889. The greatest number of deaths from influenza was in December, there being 252 reported. The statements made by the supervisors, who are the primary sources of information, cannot be accepted implicitly as to causes of death, since they have no medical knowledge and are unable to intelligently discriminate when returns of doubtful character are made to them. Were returns in this State based upon physicians' certificates of death, it is probable that the number of deaths from "la grippe" would be greatly diminished, while those recorded from pneumonia, bronchitis, etc. would be correspondingly increased.

The tables contained in Part I, especially Tables 4, 8 and 9, should be consulted in connection with this part of the report for comparative statements of the deaths registered for previous years of registration, death-rates and rates of natural increase of population, and also for death-rates of the different counties of the State in 1893.

This portion of the report may be conveniently divided into two sections:—(1) The *occurrence of deaths*, as affected by the different seasons of the year, the sex, age, color and nativity of decedents; and (2) the *causes and conditions of deaths*. It should not be understood that the second division fails to study the factors mentioned in the preceding group, but its distinctive feature is that it classifies them with reference to particular diseases instead of simply showing their relation to total mortality.

SECTION I.—OCCURRENCE OF DEATHS IN MICHIGAN DURING THE YEAR 1893.

The tables in this section contain statements in regard to the occurrence of deaths in the State during the year 1893, arranged to show the following particulars:— (1) Deaths by months and quarters; (2) number and proportion of each sex among the decedents; (3) deaths by ages of decedents; (4) color and race; (5) nativity. Death-rates for the State and counties are discussed under Section II, in connection with Causes of Death. Herewith is presented a brief statement of the more prominent facts contained in this section:—

SUMMARY OF THE REGISTRATION OF DEATHS FOR THE YEAR 1893.*

Total number of deaths returned,	21,982
Death-rate per 1,000 estimated population,	10.0
(Actual number of deaths that occurred, estimated at	35,181
Actual death-rate per 1,000, estimated at	16.0)
Increase of deaths returned for 1893 (21,982) over the number returned for 1892 (21,729),	253

In the above statement of deaths, still-births are included to the number of 1,019. Excluding these, as is customary in most mortality reports, we have:—

Total number of deaths, still-births excluded,	20,963
Death-rate, still-births excluded,	9.5

Of the 21,982 deaths in 1893, there were:—

Males,	11,772
Females,	10,142
Sex unknown or unspecified (49 of these still-births),	68

With respect to age at death, there were, of the 20,646 deaths at specified ages, exclusive of still-births:—

Deaths of infants under 1 year of age,	4,354 or 21.1 per cent
Deaths of children under 5 years of age,	6,433 or 31.0 per cent
Deaths of children under 1 year of age per 1,000 living births,	93.2

The average age at death, according to the returns for 1893, and exclusive of still-births, was as follows:—

Both sexes and all nativities,	33.3 years
Males,	34.1 “
Females,	32.4 “
Native-born (persons),	26.2 “
Foreign-born (persons),	53.1 “

Classifying the decedents by color and race, there were:—

White,	21,665
Colored (black, 152; mulatto, 40; Indian, 104),	296
Color unknown or unspecified,	21

By nativity, there were, including still-births:—

Native-born decedents,	16,187
Foreign-born decedents,	5,061
Nativity unknown or unspecified,	734

* See also summary at beginning of Section II relating especially to Causes of Death registered for 1893.

The contents and general arrangement of the tables in Section I may be seen in the following synopsis:

Synopsis of tables relating to occurrence of deaths by months, sex, age, color and nativity of decedents.

Table.	Deaths in Michigan, 1893.
39.	Number of deaths returned in Michigan for 1893, by quarters, compared with the years 1891-92, and with the average for ten years, 1883-92.
40.	Number of deaths returned in Michigan for 1893, by months, greatest first, compared with the years 1891-92, and with the average for ten years, 1883-92.
41.	Deaths in Michigan, by sex, for each of the years 1890-93, inclusive, with death-rates per 1,000 population of same sex, and ratios of deaths of males to deaths of females.
42.	Deaths in Michigan, by sex and periods of age, returned for the year 1893.
43.	Deaths, by months, at certain periods of age, showing the relations of the deaths in each month and age-period to total deaths during the year for the corresponding months and age-periods.
44.	Statement, by counties, of the number of deaths returned in Michigan for the year 1893, specifying sex, months and periods of age of decedents.
45.	Statement, by sex, months and ages in periods of years, of the number of deaths returned in Michigan for the year 1893.
46.	Statement, by sex, months and ages in years (in months for those aged less than one year), of the number of deaths returned in Michigan for the year 1893.
47.	The average age of decedents in Michigan, by nativity, for the year 1893, and comparison with the years 1891-92, and the average for ten years, 1883-92.
48.	Statement, by counties, of the number of deaths returned in Michigan for the year 1893, specifying sex and color or race.
49.	Number and percentage of deaths of each nativity in 1893, compared with 1891-92, and with the average for ten years, 1883-92.
50.	Statement, by counties, of the number of deaths returned in Michigan for the year 1893, specifying sex and nativity.
51.	List of townships reporting that no deaths occurred in 1893, showing population in 1894.
52.	List of townships making no returns of deaths for 1893, showing population in 1894.

DEATHS BY MONTHS AND QUARTERS.

Tables 39 and 40 compare the total number of deaths registered for the year 1893 with the numbers returned for the years immediately preceding, and also with the average for ten years, 1883-92. In Table 39 the comparison is made by quarters of the year, in order, while in Table 40 the numbers returned for each month are given, the months being arranged in order of the number of deaths in each.

So far as the distribution of mortality through the different months and quarters of the year is concerned, it should be remembered that these tables refer solely to deaths *returned*, not to all the deaths that actually occurred. Could we know the actual distribution of deaths through the year, it would, doubtless, be quite different from the order given in Tables 39 and 40. Comparing the number of deaths returned for the months of any registration year, it will be observed that, in general, larger numbers are returned for the latter months of the year, which are nearer to the date of enumeration in May of the year following, and that smaller numbers are returned for the early months of the year which are more remote in time from that date.

Table 39.—Deaths in Michigan by quarters of the year, exhibiting the number and per cent of totals, as returned for the years 1891-92, and comparison with the average for ten years, 1883-92. (Still-births included.)

Year and quarters.	1891.		1892.		1893.		Average for 10 years, 1883-92.	
	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.	Num-ber.	Per cent.
Year	22,079	100.0	21,729	100.0	21,982	100.0	19,681	100.0
Quarter ending March 31.....	4,645	21.0	5,573	25.6	4,856	21.2	4,381	22.0
Quarter ending June 30.....	5,366	24.3	5,060	23.3	5,028	22.9	4,616	23.5
Quarter ending September 30.....	5,798	26.3	5,422	25.0	5,903	26.9	5,489	27.6
Quarter ending December 31.....	6,222	28.2	5,629	25.9	6,332	28.8	5,241	26.6
Unknown month.....	48	.2	45	.2	63	.3	54	.3
Average *.....	5,520	25.0	5,432	25.0	5,496	25.0	4,920	25.0

* Average includes deaths in unknown month.

Table 40.—Exhibiting, by months, the number and per cent of deaths returned for the years 1891-92, and the average for ten years 1883-92, the months in order of greatest first. (Still-births included.)

Order.	1891.			1892.			1893.			Average for 10 years, 1883-92.		
	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.	Months.	Num-ber.	Per cent of total.
	Year ..	22,079	100.0	Year ..	21,729	100.0	Year	21,982	100.0	Year	19,681	100.0
1	Dec. ...	2,351	10.6	Jan. ...	2,152	9.9	Dec.	2,605	11.9	Aug.	1,950	9.9
2	Aug. ...	2,147	9.7	Dec.	1,949	9.0	Sept.	2,166	9.8	Dec.	1,865	9.5
3	April..	2,074	9.4	Aug. ...	1,942	8.9	Aug.	2,042	9.3	Sept.	1,852	9.4
4	Oct. ...	2,011	9.1	Oct. ...	1,892	8.7	Oct.	1,909	8.7	Oct.	1,756	8.9
5	Sept. ...	1,973	8.9	April..	1,879	8.6	Nov.	1,815	8.3	April..	1,661	8.4
6	Nov. ...	1,860	8.5	Sept. ..	1,802	8.3	Mar.	1,789	8.1	July ...	1,687	8.3
7	Mar. ...	1,774	8.0	Nov. ...	1,788	8.2	May.	1,744	7.9	Nov.	1,620	8.2
8	May ...	1,732	7.8	Mar. ...	1,734	8.0	July.	1,695	7.7	Mar.	1,604	8.2
9	July ...	1,678	7.6	May ...	1,700	7.8	April ...	1,668	7.6	May ...	1,547	7.9
10	June ...	1,560	7.1	Feb. ...	1,687	7.8	June	1,616	7.4	June	1,408	7.2
11	Jan. ...	1,486	6.7	July ...	1,678	7.7	Feb.	1,454	6.6	Jan.	1,380	7.0
12	Feb. ...	1,385	6.3	June ...	1,481	6.8	Jan.	1,413	6.4	Feb.	1,347	6.8
	Unk. ...	48	.2	Unk. ...	45	.2	Unk.	63	.3	Unk.	54	.3
	Av. * ...	1,840	8.3	Av. * ...	1,811	8.3	Av. *	1,832	8.3	Av. *	1,640	8.3

* Includes unknown month.

The distribution of deaths, as returned, through the months and quarters of the year differs markedly from that of the preceding year, but is, however, much more nearly related to that usually obtaining, as shown by the ten-year average. January falls again in 1893 to the last place on the list in order of mortality, its usual position, from which it was raised to the leading place in 1892 through the phenomenal number of deaths returned in that month on account of the prevalence of epidemic influenza. As to their relative positions in 1893 and in the ten-year period 1883-92, December, September, November, March, May and February stand somewhat higher in the scale of mortality than usual, while August, July, April and January are lower. Such comparisons, however, while all that our present system of registration affords, are subject to many fallacies and should be employed only for approximate estimates; we have no exact knowledge in regard to the distribution of mortality through the months and seasons of the year, and can make, therefore, no careful study of the relations of mortality from different diseases to climatic conditions:

Table 41.—Deaths in Michigan, by sex, for each of the years 1880-93 inclusive, with death-rates per 1,000 population of same sex, and ratios of deaths of males to deaths of females. (Still-births included.)

Year.	Population.		Number of deaths.		Rates per 1,000.		Deaths of males to 100 deaths of females.
	Males.	Females.	Males.	Females.	Males.	Females.	
1880 *.....	862,355	774,582	8,645	7,410	10.0	9.6	116.7
1881.....	890,372	800,694	10,263	8,910	11.5	11.1	115.2
1882.....	918,390	826,805	8,713	7,664	9.5	9.3	113.7
1883.....	946,407	852,917	9,101	7,748	9.6	9.1	117.5
1884 *.....	974,424	879,028	9,589	8,385	9.8	9.5	114.4
1885.....	993,983	899,542	9,025	7,569	9.1	8.3	119.2
1886.....	1,013,543	920,055	9,725	8,402	9.6	9.1	115.7
1887.....	1,033,102	940,569	10,563	8,877	10.2	9.4	119.0
1888.....	1,052,661	961,082	11,722	10,024	11.1	10.4	116.9
1889.....	1,072,221	981,596	10,984	9,297	10.2	9.5	118.1
1890 *.....	1,091,780	1,002,109	11,801	9,771	10.8	9.8	120.7
1891†.....	1,111,339	1,022,623	11,908	9,995	10.7	9.7	119.1
1892†.....	1,130,899	1,043,136	11,837	9,809	10.5	9.4	120.7
1893†.....	1,150,459	1,063,649	11,772	10,142	10.2	9.5	116.1
Av. 1884-93.....	1,062,441	971,339	10,893	9,227	10.3	9.5	118.1

* Census years (State census, 1884).

† Population of years 1891-93, by sex, obtained by adding average annual increase of period 1884-90. The figures are subject to correction when the sex distribution of the inhabitants of Michigan is stated by the State census of 1894.

Table 42.—*Exhibiting, by sex, and by age in periods of years, the number and proportion of persons returned as having died in Michigan during the year 1893. (Still-births included.)*

Ages in years and periods.	Number of deaths, 1893.				Per cent of deaths at each age to total of all ages.			Per cent of each sex to total of both sexes.†				Excess of the sexes by number.		Males to 100 females.
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Males.	Females.	Excess.		Males.	Females.	
										Males.	Females.			
All ages.....	21,982	11,772	10,142	68	100.0	100.0	100.0	53.7	46.3	7.4	-----	1,630	----	116
Still-births.....	1,019	572	398	49	4.6	4.9	3.9	59.0	41.0	18.0	-----	174	----	144
Under 1*.....	4,354	2,413	1,925	16	19.8	20.5	19.0	55.6	44.4	11.2	-----	488	----	125
1 to 2.....	952	532	419	1	4.3	4.5	4.1	55.9	44.1	11.8	-----	113	----	127
2 to 3.....	500	257	243	---	2.3	2.2	2.4	51.4	48.6	2.8	-----	14	----	106
3 to 4.....	343	176	167	---	1.6	1.5	1.6	51.3	48.7	2.6	-----	9	----	105
4 to 5.....	284	138	146	---	1.3	1.2	1.4	48.6	51.4	-----	2.8	-----	8	95
All under 5*.....	6,433	3,516	2,900	17	29.3	29.9	28.6	54.8	45.2	9.6	-----	616	-----	121
5 to 10.....	919	444	474	1	4.2	3.8	4.7	48.4	51.6	-----	3.2	-----	30	94
10 to 15.....	562	251	311	---	2.6	2.1	3.1	44.7	55.3	-----	10.6	-----	60	81
15 to 20.....	784	369	415	---	3.6	3.1	4.1	47.1	52.9	-----	5.8	-----	46	89
20 to 25.....	1,004	499	505	---	4.6	4.2	5.0	49.7	50.3	-----	.6	-----	6	98
25 to 30.....	835	414	421	---	3.8	3.5	4.2	49.6	50.4	-----	.8	-----	7	98
30 to 35.....	822	410	412	---	3.7	3.5	4.1	49.9	50.1	-----	.2	-----	2	100
35 to 40.....	775	362	413	---	3.5	3.1	4.1	46.7	53.3	-----	6.6	-----	51	88
40 to 45.....	658	321	337	---	3.0	2.7	3.3	48.8	51.2	-----	2.4	-----	16	95
45 to 50.....	711	390	321	---	3.2	3.3	3.2	54.9	45.1	9.8	-----	69	----	121
50 to 55.....	775	436	339	---	3.5	3.7	3.3	56.3	43.7	12.6	-----	97	----	129
55 to 60.....	846	468	378	---	3.8	4.0	3.7	55.3	44.7	10.6	-----	90	----	124
60 to 65.....	876	468	408	---	4.0	4.0	4.0	53.4	46.6	6.8	-----	60	----	115
65 to 70.....	1,075	619	456	---	4.9	5.3	4.5	57.6	42.4	15.2	-----	63	----	136
70 to 75.....	1,205	700	505	---	5.5	5.9	5.0	58.1	41.9	16.2	-----	195	----	139
75 to 80.....	1,018	581	437	---	4.6	4.9	4.3	57.1	42.9	14.2	-----	144	----	133
80 to 85.....	780	457	323	---	3.5	3.9	3.2	58.6	41.4	17.2	-----	134	----	141
85 to 90.....	402	228	174	---	1.8	1.9	1.7	56.7	43.3	13.4	-----	54	----	131
90 to 95.....	188	69	69	---	.6	.6	.7	50.0	50.0	-----	-----	-----	-----	100
95 to 100.....	21	10	11	---	.1	.1	.1	47.6	52.4	-----	4.8	-----	1	91
100 and over.....	7	4	3	---	.0	.0	.0	57.1	42.9	14.2	-----	1	----	133
Unknown ages..	317	184	132	1	1.4	1.6	1.3	58.0	42.0	16.0	-----	52	----	139

* Excluding still-births.

† Unknown sex excluded.

DEATHS AND DEATH-RATES BY SEX.

The number of deaths of males reported for any registration year always considerably exceeds the number of deaths of females. For the year 1893 the ratio was 116.1 to 100,—lower than any years given in Table 41, with the exception of the years 1881-82 and 1886. As the male population of the State is larger than the female population, it is necessary to compare the deaths of each sex, as returned, to the corresponding populations, in order to ascertain whether a higher death-rate actually obtains for males. This is done in Table 41, and the results show that the mortality of males exceeded that of females by .8 per 1,000 population during the ten-year period 1884-93. For 1893 the difference was .7 per 1,000.

Table 42 presents certain details in regard to the relative numbers of the sexes who died at certain ages during the year 1893. Male decedents outnumber the female decedents in every period of age except in those in which child-bearing, and the causes of death incident thereto, increase the mortality of the latter sex. As noted under the preceding table, the males form the larger portion of the population, so that a numerical excess of male decedents would be expected to occur at each age. Whether the mortality rate in proportion to the number of each sex at specified periods of age, was greater for either sex at certain periods of age, requires a statement of the number of inhabitants, by sex, at each period of age, which data have not yet been published by the United States census office for the census of 1890. It is to be hoped that these figures will be available by the time of the issue of the next registration report, and also the corresponding figures as obtained by the State census enumeration of 1894.

DEATHS AND DEATH-RATES BY AGES.

In the last report a table was presented showing the comparative death-rates per 1,000 population for certain important periods of age, from 1870 to 1892. This table (Table 50, page 112 of the report for 1892) is not reprinted in the present report, although, in many respects, the facts presented therein are regarded as of the first importance in the study of the vital statistics of the State. The original table is still readily accessible, and the facts that certain additional data were desirable from the United States census of 1890 and that the results of the State census of 1894 would soon be available, determined the compiler to defer the further study of this important subject until the following report. The following statement for the year 1893 is presented, however, and the remarks thereon are made with reference to Table 50 in the previous report, to which it may be regarded as a supplement.

While the death-rate for all ages in 1893 is the same as for the preceding year, 9.5 per 1,000 population, the analysis by periods of ages shows that the mortality of infants and of the aged was decidedly increased. Indeed, that for persons aged 65 years and over was greater than any previously recorded for the State since the beginning of registration. These classes, infants and persons over 65 years, are numerically small, and even a considerable increase in the death-rate may not affect the death-rate at all ages. The death-rates for the more numerous classes, children under 5 years, from 5 to 14 years, and persons aged from 15 to 64, inclusive, are exactly the same as for the preceding year.

Estimated population, deaths, death-rates per 1,000 population, and per cents of deaths at certain specified periods of age for the year 1893. (Still-births excluded.)

Periods of age.	United States census, 1890.		*Estimated population, 1893.	Deaths returned, 1893.		Death-rates per 1,000 population of same age.
	Number.	Per cent.		Number.	Per cent.	
All ages	2,093,889	100.0	2,204,363	20,963	100.0	9.5
• Under 1 year	48,935	2.3	50,705	4,354	20.8	85.9
Under 5 years	237,389	11.3	249,116	6,433	30.7	25.8
From 5 to 14, inclusive	457,692	21.9	482,799	1,481	7.1	3.1
From 15 to 64, inclusive	1,302,124	62.2	1,371,238	8,075	38.5	5.9
Aged 65 and over	92,257	4.4	97,001	4,626	22.1	47.7
Unknown ages	4,427	.2	4,409	305	1.5	69.2

* Estimated population for 1893 as given in Table 3, Part I, distributed among the several age periods in the same ratios that obtained in 1890.

The ages given above were selected in order to represent the most characteristic periods of human life,—infancy, childhood, youth, adult manhood and womanhood, and, lastly, the period of decline. The middle period, that extending from 15 to 64 years, is too long, and would be better subdivided into groups extending from 15 to 24, 25 to 44 (these two groups comprehending the child-bearing period in woman), and from 45 to 64. Such more minute subdivision would probably not materially affect the conclusions drawn above, as is shown by Körösi's studies in determining a standard age-distribution.* His age groups are: (1) under 1 year; (2) 1 to 20; (3) 20 to 50; (4) over 50. In obtaining the mortality-index, no advantage was gained by employing a greater number of groups, while the time necessary for making the calculations was minimized by using only four groups. It is, of course, absurd to calculate the mortality-index of Michigan from the very imperfect data at hand, for comparison with the corresponding mortality-indices of states or countries having accurate systems of registration, but the system may be employed to compare the mortality in Michigan in widely separated years. For example the years 1870, 1880 and 1890 may be standardized on the age distribution of the year 1880 as a basis. The results are given in a table on the following page.

It thus appears that the distribution of ages in the State has not changed sufficiently since 1870 to materially affect the death-rates, which are, therefore, directly comparable. The distribution was slightly more favorable in 1870 (measured by the tendency to a low death-rate) than in 1880, the proportion of persons over 65 years having increased from 2.7 per cent to 3.5 per cent in the decade. This rise in the proportion of the aged was partially counterbalanced by a fall in the percentage of infants from 2.8 to 2.6 per cent, and of children under five years of age from 13.9 to 12.7 per cent. The same changes continued during the decade 1880-90, for which period the tendency to a lower death-rate due to a diminution in the proportions of infants and children seems to have almost exactly balanced the opposite tendency arising from an increased proportion of elderly people in the population.

* "Report of an International Mortality Standard, or Mortality Index," read at the session of the International Statistical Institute, Chicago, 1893, and printed by the American Statistical Association, Publications, December, 1893.

MORTALITY-INDEX OF MICHIGAN.

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Comparison of death-rates of Michigan for the years 1870, 1880 and 1890, making allowance for changes in age distribution of population, i. e. mortality-indices of those years standardized to age distribution of census of 1880. (Still-births and deaths at unknown ages excluded.)

Periods of age.	Popula- tion,— Per cent, 1880.	1870.		1880.		1890.	
		Death- rate.	Product.	Death- rate.	Product.	Death- rate.	Product.
All ages.....	100.0	8.7	-----	9.2	-----	9.6	-----
Under 1 year.....	2.6	74.4	1.9	75.7	2.0	84.0	2.2
2-4.....	10.1	14.7	1.5	14.9	1.5	12.4	1.2
5-14.....	22.6	8.5	.8	4.6	1.0	3.8	.9
15-64.....	61.2	5.4	3.3	5.4	3.3	6.1	3.7
Over 65 years.....	3.5	37.0	1.3	39.9	1.4	41.9	1.5
Mortality-index.....	-----	-----	8.8	-----	9.2	-----	9.6

It may be of interest to make a similar comparison using the age distribution of Sweden employed by Körösi as a standard. The population of Michigan is somewhat more favorably grouped, but the variation in the death-rate from this factor amounts to less than 1 per 1,000. It thus appears that only a small part of the difference in the registered death-rates of Michigan and Sweden * can be explained as due to the different distribution of the population by ages, and that either better climatic and sanitary conditions, or, what is probably the most important factor, imperfect registration in Michigan, must be called upon to account for the greater part of the difference.

Death-rate (mortality-index) of Michigan for 1880 standardized to the age distribution of Sweden. (Still-births and deaths at unknown ages excluded.)

Periods of age.	Population of Michigan, 1880.		Deaths.	Death- rates.	Popula- tion of Sweden, per cent.	Product.
	Number.	Per cent.				
All ages.....	1,336,987	100.0	15,042	9.2	100.0	-----
0-1.....	42,585	2.6	3,283	75.9	2.7	2.0
2-19.....	699,028	42.7	4,907	6.9	39.8	3.7
20-49.....	693,910	42.4	3,373	4.7	38.6	1.3
50+.....	201,414	12.3	3,729	18.5	18.9	3.5
Mortality-index.....	-----					10.0

* The death-rate of Sweden was 18.1 per 1,000 population in 1880.

VITAL STATISTICS OF MICHIGAN, 1893.

Table 43.—*The relation of the deaths at different periods of age to deaths at all ages, by months; and for the same period of age the relation of the deaths in each month to the deaths in the year 1893. (Still-births included.)*

Deaths by ages in periods of years.	Year, 1893.	Months, 1893.											
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
All ages.....	*21,919	1,413	1,454	1,739	1,668	1,744	1,616	1,695	2,042	2,166	1,900	1,818	2,605
Under 1 †.....	5,358	301	354	496	367	341	344	464	724	654	509	387	497
Number.....													
Per cent of all ages.....	24.4	21.3	24.3	24.4	22.0	19.6	21.3	27.4	35.5	30.2	26.7	20.2	19.1
Per cent of all months.....	100.0	5.6	6.6	8.1	6.8	6.4	6.4	8.7	13.5	12.2	9.5	6.8	9.3
Under 5 †.....	7,494	440	488	613	527	505	457	632	937	909	681	538	677
Number.....													
Per cent of all ages.....	33.9	31.1	33.6	34.3	31.6	29.0	30.1	37.3	45.9	42.0	35.7	29.6	26.0
Per cent of all months.....	100.0	5.9	6.6	8.3	7.1	6.8	6.6	8.5	12.6	12.2	9.2	7.2	9.1
5 to 10.....	919	69	70	76	71	90	70	80	75	81	71	70	96
Number.....													
Per cent of all ages.....	4.2	4.9	4.8	4.2	4.3	5.2	4.3	4.7	3.7	3.7	3.7	3.9	3.7
Per cent of all months.....	100.0	7.5	7.6	8.3	7.7	9.8	7.6	8.7	8.2	8.8	7.7	7.6	10.4
10 to 20.....	1,344	81	103	123	96	107	121	109	120	112	113	123	186
Number.....													
Per cent of all ages.....	6.1	5.7	7.1	6.9	5.8	6.1	7.5	6.4	5.9	5.2	5.9	6.8	5.2
Per cent of all months.....	100.0	6.0	7.7	9.2	7.1	8.0	9.0	8.1	8.9	8.3	8.4	9.2	10.1
20 to 30.....	4,794	325	305	414	427	418	349	384	396	441	480	424	531
Number.....													
Per cent of all ages.....	21.9	23.0	21.0	23.1	25.6	24.0	21.6	21.5	17.9	20.4	22.5	23.3	20.4
Per cent of all months.....	100.0	6.8	6.4	8.6	8.9	8.7	7.3	7.6	7.6	9.2	9.0	8.8	11.1
30 and over.....	7,123	475	465	541	522	606	558	495	530	550	588	639	1,134
Number.....													
Per cent of all ages.....	32.5	33.6	32.0	30.2	31.3	34.7	34.5	29.2	25.5	26.8	30.8	35.1	43.5
Per cent of all months.....	100.0	6.7	6.5	7.6	7.3	8.5	7.8	7.0	7.3	8.1	8.3	9.0	15.9
Unknown ages.....	305	23	23	22	25	18	31	15	24	43	26	24	31
Number.....													
Per cent of all ages.....	1.4	1.3	1.6	1.2	1.5	1.0	1.9	0.9	1.2	2.0	1.4	1.3	1.2
Per cent of all months.....	100.0	7.5	7.5	7.2	8.2	5.9	10.2	4.9	7.9	14.1	8.5	7.9	10.2

* Excluding 68 deaths in unknown month.

† Including still-births.

DEATH-RATES OF CHILDREN UNDER FIVE YEARS, BY COUNTIES. 101

DEATHS BY PERIODS OF AGE AND MONTHS OF DEATH.

Table 43 exhibits the deaths of 1893 arranged according to the months of death and certain periods of age of the decedents. Still-births are included and also deaths at unspecified ages. The periods of age above five years agree with the form of this table in previous reports, thus enabling comparisons to be conveniently made with other years. So far as the relative numbers of deaths in the several months is concerned, this table would be far more valuable were it not certain, as already referred to under Tables 39 and 40, that the deaths returned for any month are largely affected by the nearness or remoteness of that month from the date of enumeration in May, 1894.

Including still-births, nearly one quarter of the total number of deaths recorded are those of infants under one year of age, and over one third are those of children under five years. About one third of the total deaths are those of persons aged from five to fifty years, and the remaining third is constituted of persons aged fifty years and over. The percentage of deaths over fifty years of age (32.5 per cent), is slightly higher than that for 1892 (32.3 per cent).

In Table 44 a full statement is given, for each county of the State, of the number of persons of each sex who died during each month of the year 1893, and also the ages, grouped in periods of five years, of the decedents in each county. As the number of deaths returned from any county depends to a great extent upon the number of inhabitants, the data given in this table should be considered in connection with Table 8, Part I, in which the death-rates per 1,000 estimated population are calculated.

The deaths of children under five years of age are of especial interest as indicative of the amount of infant mortality. It would have been desirable to have statements of the number of deaths at each age under five years, and also to distinguish between the months of the first year of life, since the death-rate very rapidly diminishes with a slight increase in age at this period. It should be remembered that still-births are included in this table, and also that the numbers returned for each period for different counties may be dependent, to a large extent, upon the special age distribution of the population. Thus, counties of the upper peninsula have usually a larger proportion of children and young adults than the remainder of the State; counties of the southern part of the lower peninsula show a predominance of inhabitants of advanced years, and the deaths of children returned from these parts of the State vary in like manner.

In order to obtain a basis of comparison, the death-rates of children under five years of age per 1,000 population of the same age at the last census are stated for each county. No allowance can be made in such a comparison for growth during the three years 1890-93, but if such growth be distributed with a fair degree of uniformity over the State, the results obtained for the different counties will be roughly comparable.

Taking the average death-rate of the State for children under five years of age (31.4 per 1,000) as the standard, we may distinguish four groups of counties having child mortalities (1) over 50 per cent above the average; (2) less than 50 per cent above the average; (3) less than 50 per cent below the average; and, finally, (4) more than 50 per cent below the average. The counties in each group will be found on page 114 immediately following Table 44.

DEATHS BY COUNTIES, SEX, MONTHS AND AGES.

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Antrim	Total	53	4	5	7	2	1	4	8	7	7	2	4	19	3	2	3	1	3	2	4	1	1	2	2	4	1
	Males	28	2	4	5	1	---	3	4	1	5	2	1	1	15	2	---	---	1	2	---	---	---	---	1	2	1
	Females	25	2	1	2	1	1	2	4	6	2	---	---	1	3	4	1	2	---	---	---	1	1	2	4	1	1
	Total	38	2	5	2	4	3	8	1	2	4	1	7	4	18	---	1	2	4	1	2	---	3	2	1	1	---
Arenac	Males	21	2	4	---	3	---	2	---	1	3	1	3	2	10	---	1	1	---	2	---	---	---	---	2	1	---
	Females	16	---	1	2	1	2	1	1	1	---	4	2	5	---	---	1	8	1	---	1	1	1	1	---	1	
	Unknown	1	---	---	---	---	1	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	
	Total	44	4	2	4	1	2	3	2	7	7	4	1	7	19	1	---	2	2	2	---	4	2	1	3	2	1
Baraga	Males	25	8	1	2	---	1	2	1	5	4	2	1	3	11	1	---	2	1	1	---	1	1	---	3	2	1
	Females	19	1	1	2	1	1	1	1	2	3	2	---	4	8	---	2	---	1	1	---	3	1	---	1	1	
	Total	211	13	19	22	16	29	9	12	10	27	11	17	27	41	17	2	7	9	4	4	5	2	8	9	23	
	Males	104	6	9	12	8	14	6	7	2	16	6	5	13	24	7	1	5	3	1	1	2	1	---	5	9	
Barry	Females	107	6	10	10	8	15	3	5	8	11	5	12	14	17	10	1	2	6	3	3	1	6	4	14	6	
	Total	708	49	52	32	56	53	37	43	62	86	77	74	56	1	323	77	89	24	31	21	15	11	17	11	17	
	Males	364	19	29	15	31	23	23	27	33	45	41	35	43	---	169	44	16	7	17	12	5	6	9	7	12	
	Females	342	30	23	17	25	29	14	16	29	41	35	39	43	1	152	33	23	17	14	9	10	5	8	4	5	
Bay	Unknown	2	---	---	---	---	1	---	---	---	1	---	---	2	---	---	---	---	---	---	---	---	---	---	---	---	
	Total	65	3	2	7	2	9	2	5	8	4	8	7	19	5	2	1	6	2	4	1	4	1	1	1	3	
	Males	29	1	2	5	2	4	---	2	2	4	---	4	3	10	1	---	---	---	4	1	---	---	---	---	1	
	Females	36	2	---	2	---	5	2	3	6	4	4	4	9	4	2	1	2	1	4	1	2	---	1	1	2	
Benzie	Total	393	24	29	34	32	39	28	22	40	82	28	29	53	3	98	12	4	13	18	13	18	14	13	14	9	
	Males	200	11	16	17	19	17	13	24	17	10	14	23	53	2	3	6	7	6	6	8	5	2	2	9	13	
	Females	188	13	13	17	13	20	10	9	15	15	17	15	25	3	40	10	1	7	11	7	12	6	8	7	8	
	Unknown	5	---	---	---	---	---	1	---	1	---	1	---	2	---	5	---	---	---	---	---	---	---	---	---	---	
Berrien	Total	273	19	26	33	13	24	16	11	23	22	21	25	41	---	47	13	8	14	12	12	14	6	6	9	13	
	Males	129	13	10	13	5	11	6	5	13	18	10	12	13	---	26	2	3	6	6	5	4	7	1	---	1	
	Females	144	6	16	20	8	13	10	6	9	4	11	13	28	---	21	11	5	2	8	7	8	7	5	6	8	
	Unknown	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Branch	Total	273	19	26	33	13	24	16	11	23	22	21	25	41	---	47	13	8	14	12	12	14	6	6	9	13	
	Males	129	13	10	13	5	11	6	5	13	18	10	12	13	---	26	2	3	6	6	5	4	7	1	---	1	
	Females	144	6	16	20	8	13	10	6	9	4	11	13	28	---	21	11	5	2	8	7	8	7	5	6	8	
	Unknown	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

Table 44.—CONTINUED.—Deaths by counties, by sex, by months, and by ages, 1893.

County.	Sex.	Year, 1893.	Months, 1893.										Ages in periods of years, 1893.																					
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.	
Calhoun	Total	437	22	36	33	44	27	34	27	25	47	40	40	61	1	85	8	11	12	11	13	12	17	13	13	15	16	31	42	44	38	56	2	Unknown.
	Males	223	13	12	16	24	11	22	18	5	24	22	23	32	1	44	4	3	1	4	4	6	6	8	8	10	10	12	26	27	22	26	2	
	Females	214	9	24	17	20	16	12	9	20	23	18	17	29		41	4	8	11	7	9	6	11	5	5	5	6	19	16	17	14	30		
Cass	Total	173	7	10	16	11	9	9	10	18	23	21	12	26	1	40	4	2	4	6	5	4	6	8	10	7	9	5	16	21	11	15		
	Males	85	3	2	7	5	2	6	7	13	13	10	4	13		19	2																	
	Females	88	4	8	9	6	7	3	3	5	10	11	8	13	1	21	2	2	1	3	4	3	4	4	3	1	6	2	6	11	7	8		
Charlevoix	Total	75	3	7	7	9	5	5	5	7	3	5	12	7		19	3	2	4	3	3	4		1	2	5	2	3	5	6	7	6		
	Males	44	2	6	2	5		4	3	6	1	3	8	4		11	1	1	4															
	Females	31	1	1	5	4	5	1	2	1	2	2	4	3		8	2	1		3														
Cheboygan	Total	89	7	3	5	7	9	7	6	16	12	7	4	6		46	4	1	5	3	1		4	3	5	4	4	2	2	2	8			
	Males	50	4	3	2	6	7	5	2	10	4	3	3	1		24	4	1	3	1			2	2	5	3	1	1	1	1	2			
	Females	39	3		3	1	2	2	4	6	8	4	1	5		22		2	2	2	1	2	1	1	1	1	3	1	1	1		3		
Chippewa	Total	101	8	6	10	8	12	8	7	4	10	7	8	11	2	42	6	7	4	10	5	2	2	2	3	2	2	2	2	1	1	3	7	
	Males	60	4	3	7	4	8	4	3	2	7	4	6	7	1	30	5	2	1	5	1	1		2	2	2	2	2	2	2	1	1	3	7
	Females	41	4	3	3	4	4	4	4	2	3	3	2	4	1	12	1	5	3	5	4	1	2		2	2	2	2	2	1	1	2	3	
Clare	Total	56	2	7	5	4	5	6	5	2	9	8	2	4		26	1		4	1	1	3	2		1	2	4	2	3	2	1	5		
	Males	28		5	3	1	2	5	4	1	2	3	1	1		11			2								2	4		1		1	4	
	Females	31	2	2	2	3	3	1	1	1	7	5	1	3		15	1		2	1	1	1	2		1				2	2			1	
Clinton	Total	205	14	10	13	20	20	16	12	14	24	22	13	25	2	42	6	4	6	11	6	3	10	6	7	7	12	15	17	20	14	8		
	Males	97	6	4	5	12	9	10	7	6	8	10	9	10	1	22	2	3		2	2	2	5	1	3	5	7	10	7	11	6	7	2	
	Females	108	8	6	8	8	11	6	5	8	16	12	4	15	1	20	4	1	6	9	4	1	5	5	4	2	5	5	10	9	10	7	1	

DEATHS BY COUNTIES, SEX, MONTHS AND AGES.

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Crawford	Total	20	3	5	6	1	1	1	1	8	4	8	3	2	1	1	1	1	1	3	1	1										
	Males	9	2	2	2	1	1	1	1	2	2	2	1	1	1	1	1	1	1	3	1	1										
	Females	11	1	3	4	1	1	1	1	1	2	1	3	1	1	1	1	1	1	1	1	1										
Delta	Total	175	9	13	12	11	16	13	21	28	24	5	11	12	99	8	5	4	4	6	11	4	4	6	7	8	6	2	3	1	2	
	Males	100	6	8	8	7	10	7	11	15	13	4	5	6	51	3	3	3	2	4	7	2	4	5	5	4	5	4	3	1	1	
	Females	75	3	5	4	4	6	6	10	13	11	1	6	6	48	2	1	2	2	4	2	2	4	2	2	2	3	2	2	1	1	
Dickinson	Total	247	7	16	18	19	16	21	24	28	29	29	23	17	162	14	2	8	7	6	13	10	2	7	4	3	3	1	1	2	2	3
	Males	148	5	9	12	9	9	14	16	18	14	19	13	10	100	6	1	4	5	4	10	4	2	4	2	1	2	2	1	1	1	1
	Females	99	2	7	6	10	7	7	8	10	15	10	10	7	62	8	1	4	2	2	3	6	3	2	2	1	1	1	1	1	1	1
Eaton	Total	271	21	28	29	18	25	15	23	17	23	21	25	26	54	2	8	10	7	10	12	7	14	10	12	17	10	11	28	29	28	4
	Males	138	10	10	15	10	18	9	8	7	10	11	15	15	24	1	3	5	3	4	3	8	4	6	10	6	5	18	17	18	2	2
	Females	130	11	17	14	8	7	6	14	10	13	10	10	10	27	1	5	5	4	6	9	4	8	6	6	7	4	6	8	10	2	2
Emmet	Unknown	3	1	1	1	1	1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Total	86	7	3	5	3	10	12	6	2	6	5	10	16	1	27	5	2	5	5	2	7	7	7	7	7	7	7	7	7	7	7
	Males	40	2	3	2	2	5	8	2	2	2	2	6	7	1	14	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3
Geneseo	Females	46	5	3	3	3	5	4	4	2	4	3	4	9	13	8	2	3	3	2	4	4	4	4	4	4	4	4	4	4	4	4
	Total	424	42	30	45	36	28	22	29	39	34	84	30	53	101	14	13	6	16	13	12	15	11	11	18	23	16	22	43	39	50	1
	Males	211	20	21	25	18	16	9	17	16	16	11	14	28	47	6	9	4	7	5	7	6	2	3	13	15	7	11	21	22	28	1
Gladwin	Females	213	22	9	21	18	12	13	12	23	18	23	16	25	54	8	4	2	9	8	5	9	9	8	5	8	9	11	22	17	24	1
	Total	29	1	1	2	2	1	4	3	4	1	3	5	2	11	1	2	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Males	14	1	1	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gogebic	Females	15	1	1	1	1	1	1	1	1	1	1	1	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Total	257	6	20	15	17	16	28	18	48	28	21	18	20	2	142	13	8	13	27	12	9	6	5	2	5	3	1	1	1	1	1
	Males	142	4	11	7	11	4	21	13	20	18	13	10	8	2	78	6	2	5	16	8	5	6	2	2	4	1	1	1	1	1	1	1
Unknown	Females	114	2	9	8	6	12	7	5	28	10	7	8	12	68	7	6	8	11	4	1	3	3	3	3	3	3	3	3	3	3	3
	Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

VITAL STATISTICS OF MICHIGAN, 1893.

Table 44.—Continued.—Deaths by counties, by sex, by months, and by ages, 1893.

County.	Sex.	Year, 1893.	Months, 1893.												Ages in periods of years, 1893.																			
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.	
Gd. Traverse.	Total	196	19	12	17	20	15	9	14	13	16	20	13	28	40	5	10	6	15	14	10	7	12	9	6	5	11	7	12	10	10	7	Unknown.	
	Males	104	14	6	7	7	4	6	10	8	9	10	8	15	23	4	7	2	6	4	7	6	3	7	2	4	4	6	5	5	5	4	Unknown.	
	Females	92	5	6	10	13	11	3	4	5	7	10	5	13	17	1	3	4	9	10	3	1	9	2	4	1	7	1	7	5	5	3	Unknown.	
	Total	186	11	11	13	13	16	14	15	15	22	18	17	20	1	63	2	7	3	14	4	8	3	8	7	6	8	6	13	11	8	13	2	Unknown.
	Males	91	2	6	5	8	10	5	7	8	15	7	7	11	35	3	3	1	3	1	3	1	2	3	3	6	3	7	6	8	11	1	1	Unknown.
Gratiot.	Females	95	9	5	8	5	6	9	8	7	7	11	10	9	1	28	2	4	3	11	3	5	2	6	4	3	2	3	6	5	5	2	1	Unknown.
	Total	289	20	23	17	18	27	21	17	20	31	28	23	39	39	7	5	8	14	2	10	9	7	11	12	10	28	26	35	29	34	3	Unknown.	
	Males	143	9	12	6	12	15	14	7	13	15	15	7	18	18	3	3	1	8	1	5	5	4	3	6	3	17	15	12	17	22	3	Unknown.	
	Females	146	11	11	11	6	12	7	10	7	16	13	21	21	21	21	4	2	7	6	1	5	4	3	8	6	7	11	11	23	12	12	3	Unknown.
	Total	525	35	28	29	22	44	35	37	78	70	44	51	54	325	15	6	16	29	19	16	13	9	9	13	11	7	6	9	8	11	8	Unknown.	
Houghton.	Males	284	20	9	14	12	32	23	21	45	41	23	19	25	167	9	3	10	17	11	10	11	6	3	7	6	5	4	7	7	5	3	Unknown.	
	Females	241	15	17	15	10	12	16	38	29	21	32	29	158	6	3	6	12	8	6	7	3	6	8	5	2	2	2	3	6	6	12	Unknown.	
	Total	300	21	18	28	20	26	32	34	21	28	24	17	31	131	17	16	23	13	7	17	7	7	8	6	7	9	8	6	6	12	Unknown.		
	Males	155	10	8	16	11	12	17	19	15	13	13	9	12	66	11	9	9	8	4	6	1	3	2	4	4	5	6	3	5	9	Unknown.		
	Females	142	10	10	12	9	14	15	14	6	15	11	8	18	62	6	7	14	5	3	11	6	4	6	2	3	4	2	3	1	3	Unknown.		
Huron.	Unknown	3	1						1					1	8																		Unknown.	
	Total	347	17	28	27	89	38	30	33	28	33	18	25	29	2	96	14	6	18	20	7	13	10	12	12	13	11	14	28	29	21	23	3	Unknown.
	Males	172	7	14	12	20	13	14	16	16	13	11	14	17	57	7	10	6	2	6	2	5	4	7	6	8	14	11	9	16	2	1	Unknown.	
	Females	172	10	14	15	17	20	16	17	12	19	7	11	12	2	36	7	6	8	14	5	7	8	7	8	6	5	6	14	15	12	7	1	Unknown.
	Unknown	3			2						1					3																	Unknown.	

DEATHS BY COUNTIES, SEX, MONTHS AND AGES.

Ionia	Total	306	20	18	20	19	28	24	19	27	22	29	28	51	1	58	15	4	11	9	13	22	16	12	13	12	20	19	22	20	19
	Males	158	11	10	14	8	15	12	9	11	12	14	13	29	--	28	8	2	3	4	6	9	8	4	7	6	10	11	11	15	13
	Females	143	9	7	6	11	13	11	10	15	10	15	15	21	--	25	7	2	8	5	7	13	8	6	6	6	10	8	11	5	5
	Unknown	5	--	1	--	--	--	1	--	1	--	--	--	--	--	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	19
Iosco	Total	120	10	7	6	9	6	10	5	12	14	7	16	17	1	50	8	1	9	7	5	5	6	1	2	2	5	7	2	4	2
	Males	72	6	4	5	5	5	10	3	4	5	5	9	11	--	28	6	1	5	4	3	4	3	--	2	2	4	4	1	1	4
	Females	48	4	3	1	4	1	--	2	8	9	2	7	6	1	22	2	--	4	3	2	1	3	1	--	--	1	3	1	3	2
	Total	81	3	3	6	3	3	3	1	6	36	3	6	7	1	27	3	1	2	3	7	5	4	4	1	1	1	--	--	1	120
Iron	Males	62	3	--	3	2	1	3	--	4	34	2	2	7	1	15	1	1	1	2	6	5	4	3	--	1	1	--	--	1	120
	Females	19	--	3	3	1	2	--	1	2	2	1	4	--	--	12	2	--	1	1	1	--	--	1	1	--	--	--	--	--	--
	Total	138	12	7	12	13	13	13	7	10	12	14	8	15	2	44	3	4	8	8	7	3	4	3	10	2	4	7	6	6	5
	Males	80	9	3	7	5	6	7	6	6	7	11	4	8	1	30	--	--	2	3	6	2	1	1	1	5	2	2	5	4	4
Isabella	Females	58	3	4	5	8	7	6	1	4	5	3	4	7	1	14	3	2	5	2	5	2	3	2	5	--	2	2	2	2	4
	Total	537	39	39	26	49	41	39	50	45	47	45	49	65	--	126	13	3	24	22	20	24	19	16	31	24	26	39	82	33	51
	Males	261	18	17	10	23	22	23	26	26	21	21	22	26	--	71	4	1	11	8	7	14	4	4	11	9	12	14	23	13	15
	Females	275	21	22	16	26	19	16	24	19	23	23	27	39	--	54	9	2	13	14	13	10	15	12	20	15	14	12	16	19	18
Jackson	Unknown	1	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total	459	22	28	31	38	34	44	31	50	52	36	42	50	1	106	10	7	20	14	16	12	19	21	15	25	17	30	29	45	36
	Males	244	10	14	13	21	14	25	20	24	28	26	21	27	1	53	6	5	6	5	6	7	11	12	10	12	7	11	16	30	23
	Females	213	12	14	16	17	20	19	10	25	24	10	21	23	--	51	4	2	14	9	10	5	8	9	5	13	10	19	13	15	13
Kalamazoo	Unknown	2	--	--	--	--	--	--	1	1	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total	44	--	2	4	3	2	4	8	3	2	6	4	6	--	17	1	--	1	3	2	--	3	1	2	2	1	--	4	1	1
	Males	23	--	--	2	1	1	4	4	1	1	2	4	3	--	11	1	--	--	1	1	--	--	2	1	--	--	3	1	--	1
	Females	21	--	2	2	2	1	--	4	2	1	4	--	3	--	6	--	--	1	2	1	--	3	1	--	1	1	--	1	--	1
Kalkaska	Total	1,244	83	74	89	100	107	98	89	121	123	118	102	140	--	428	58	32	42	59	50	52	47	31	52	47	49	42	74	65	49
	Males	717	47	32	61	53	69	56	44	83	71	66	54	81	--	261	26	10	20	26	33	19	16	19	32	29	33	29	51	47	29
	Females	526	36	42	27	47	38	42	45	38	52	52	48	59	--	166	32	22	22	33	17	33	31	12	20	15	16	13	23	18	20
	Unknown	1	--	--	1	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kent	Total	1,244	83	74	89	100	107	98	89	121	123	118	102	140	--	428	58	32	42	59	50	52	47	31	52	47	49	42	74	65	49
	Males	717	47	32	61	53	69	56	44	83	71	66	54	81	--	261	26	10	20	26	33	19	16	19	32	29	33	29	51	47	29
	Females	526	36	42	27	47	38	42	45	38	52	52	48	59	--	166	32	22	22	33	17	33	31	12	20	15	16	13	23	18	20
	Unknown	1	--	--	1	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

VITAL STATISTICS OF MICHIGAN, 1893.

Table 44.—CONTINUED.—Deaths by counties, by sex, by months, and by ages, 1895.

Counties.	Sex.	Year, 1893.	Months, 1893.												Ages in periods of years, 1893.																			
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.	
Keweenaw	Total	30	---	3	2	---	2	5	2	5	3	2	3	3	---	21	1	---	1	---	---	1	---	1	---	---	---	---	2	2	---	1	---	---
	Males	20	---	3	1	---	---	4	---	4	2	2	2	2	---	14	---	---	1	---	---	---	1	---	---	---	---	---	1	1	---	1	---	---
	Females	10	---	---	---	2	1	2	1	1	1	---	---	---	1	7	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lake	Total	42	2	4	6	1	4	6	3	4	3	7	1	1	---	12	5	8	2	1	2	2	2	---	3	---	2	2	5	1	---	---	---	
	Males	25	2	3	5	1	3	1	3	1	2	3	---	---	1	7	3	1	1	---	1	2	1	---	1	---	1	2	4	1	---	---	---	
	Females	17	---	1	1	---	1	5	---	3	1	4	1	---	---	5	2	2	1	1	1	---	1	---	2	---	---	---	---	---	---	---	---	---
Lapeer	Total	217	11	14	21	17	18	16	16	21	25	16	12	30	---	47	7	2	7	10	5	6	8	9	7	12	9	13	21	21	726	---	---	
	Males	114	4	10	9	9	10	8	12	10	12	8	6	16	---	23	5	---	4	7	1	2	4	3	2	7	6	5	14	11	216	---	---	
	Females	103	7	4	12	8	8	4	11	13	8	6	14	---	---	22	2	2	3	3	4	4	4	6	5	5	8	8	7	10	510	---	---	
Leelanau	Total	77	4	4	2	6	5	7	6	9	4	16	1	26	3	1	3	8	1	8	2	3	5	3	2	3	3	3	3	1	1	1	---	
	Males	41	2	2	---	3	3	4	3	3	5	8	2	5	16	1	16	1	---	2	4	---	2	1	1	3	2	1	3	1	1	1	1	---
	Females	36	2	2	2	3	2	3	3	3	4	1	1	2	11	---	10	2	1	4	1	6	1	2	2	1	1	---	2	2	---	---	---	
Lenawee	Total	406	30	17	34	25	26	36	25	40	52	40	80	51	---	95	15	2	19	9	12	11	12	12	10	14	11	20	33	36	32	55	8	---
	Males	204	13	7	18	10	12	18	9	20	28	20	21	28	---	49	7	---	7	3	1	5	6	6	6	9	5	11	21	19	15	32	3	---
	Females	202	17	10	16	15	14	18	16	20	24	20	9	23	---	47	8	2	12	6	11	6	6	6	4	5	6	9	12	17	17	23	5	---
Livingston	Total	186	12	16	15	18	9	18	13	12	19	17	14	20	3	32	4	4	6	8	4	3	8	6	11	8	12	15	12	14	16	22	1	---
	Males	97	6	6	11	12	4	10	9	7	9	9	4	10	---	21	---	2	2	5	---	1	3	2	6	3	6	7	6	5	12	15	1	---
	Females	88	6	10	4	6	5	8	4	5	10	8	10	10	2	10	4	2	4	3	4	2	5	4	5	5	6	8	6	9	4	7	---	---
	Unknown	1	---												1																			

DEATHS BY COUNTIES, SEX, MONTHS AND AGES.

[illegible]

DEATHS BY COUNTIES, SEX, MONTHS AND AGES.

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Muskogean.....	Total.....	412	30	24	25	31	35	25	40	33	44	35	24	40	1	143	20	14	19	22	10	11	15	17	16	17	16	11	15	31	19	23		
	Males.....	218	17	15	12	16	13	10	23	16	23	22	20	21	1	75	12	6	10	8	5	4	5	6	11	9	9	7	8	11	11	12	4	
	Females.....	195	12	16	13	15	17	15	18	22	21	18	14	19		64	8	8	8	14	5	7	10	11	5	8	7	4	7	10	7	11	1	
	Unknown.....	4	1	3												4																		
Newarigo.....	Total.....	86	2	2	3	7	16	4	5	6	9	13	4	15		24		1	7	6	3	1	4	2	4	2	7	3	5	5	4	8		
	Males.....	44		2	3	3	7	1	3	2	7	6	1	9		11		1	4	3	1	1	2		1		6	2	3	2	2	5		
	Females.....	42	2					4	9	3	2	4	2	7	3	6	13			3	3	2		2	2	3	2	1	1	2	3	2	3	
	Total.....	402	25	33	31	32	32	31	28	32	36	28	43	51		47	9	6	15	12	15	14	19	17	20	18	35	21	23	37	32	56	6	
Oakland.....	Males.....	223	16	17	14	19	26	17	10	20	21	12	27	24		23	5	4	12	6	6	8	11	7	13	10	24	5	11	26	21	30	2	
	Females.....	178	9	15	17	13	6	14	18	12	15	16	16	27		23	4	2	3	6	9	6	8	10	8	8	11	16	12	11	11	26	4	
	Unknown.....	1		1												1																		
	Total.....	121	10	18	7	6	9	11	7	13	6	11	7	16		31	3	2	3	6	5	1	9	8	3	8	9	3	10	9	6	7	3	3
Oceana.....	Males.....	69	5	9	5	2	6	8	3	7	4	7	5	8		17	2	2		4	3	1	2	5	2	1	5	2	7	4	6	4	2	
	Females.....	51	4	6	2	4	3	3	4	6	2	4	2	8		18	1		3	2	2		7	3	1	2	4	1	3	5	3	1		
	Unknown.....	1	1													1																		
	Total.....	23	1		2	2	3	1	1	2	2	1	3	5		8	3					1	2	1		2		1	3	1	1	1		
Ogemaw.....	Males.....	15									2	2	1	2	4	7	2												1	2	1	1		
	Females.....	8	1		2	2								1	1	1	1					1	2		2									
	Total.....	31	2	1	2	2	3	3	2	1	5	1	6	3		15		1	1	1	3		1		1			1						
	Males.....	17	1	1	1	1	2	3	1	1	2		2	2		5		1	1			8												
Ontonagon.....	Females.....	11	1		1	1	1		1		3	1	1	1		7				1			1					1					1	
	Unknown.....	3											8			8																		
	Total.....	116	5	6	18	5	18	9	10	9	9	11	4	12		33	7	5	2	8	2	5	4	3	3	7	3	6	11	2	8	5	2	
	Males.....	61	1	3	10	4	8	6	3	3	6	7	2	8		18	4	1	2	6		1	1		2	4	2	5	4	2	5	2	2	
Osceola.....	Females.....	54	4	3	8	1	10	3	7	6	3	8	2	4		14	3	4		2	2	4	3	3	1	3	1	1	7		3	3		
	Unknown.....	1											1			1																		

Sanilac	Total	251	13	10	23	19	19	17	19	20	33	28	21	29	91	10	14	9	22	11	5	7	5	5	8	6	12	11	9	14	12		
	Males	124	5	6	11	11	7	11	8	11	16	12	12	14	43	5	10	3	6	4	2	3	3	3	5	2	8	7	7	7	6		
	Females	127	8	4	12	8	12	6	11	9	17	16	9	15	48	5	4	6	16	7	3	4	2	2	3	4	4	4	2	7	6		
Schoolcraft	Total	46	2	2	7	6	3	3	5	4	7	5	5	1	1	18	2	2	1	4	3	3	1	1	2	2	2	3	2	2	2		
	Males	34	2	2	5	3	1	3	3	3	5	5	5	1	1	13	1	2	1	1	3	2	1	1	1	2	2	3	2	1	1		
	Females	12	0	0	2	3	2	0	2	1	2	0	0	0	0	5	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0		
Shiawassee	Total	254	17	12	24	17	19	25	23	16	20	24	29	28	56	10	8	16	11	9	8	10	6	6	14	17	10	10	19	20	4		
	Males	124	9	8	11	5	9	12	11	8	10	12	12	17	29	5	1	7	7	4	2	5	5	4	4	9	5	6	12	10	8	1	
	Females	130	8	4	13	12	10	13	12	8	10	12	17	11	27	5	7	9	4	5	6	5	1	2	10	8	5	4	7	10	12	3	
St. Clair	Total	566	45	37	38	36	43	39	34	60	55	45	58	76	193	35	19	26	30	32	17	18	16	12	12	21	22	21	28	27	34	3	
	Males	285	24	21	29	19	19	11	16	34	28	21	35	38	108	16	9	10	20	13	9	10	6	7	5	11	8	11	16	13	20	3	
	Females	289	20	16	9	17	23	28	18	26	27	24	23	38	83	19	10	16	10	19	8	8	10	5	7	10	14	10	12	14	14	0	
St. Joseph	Unknown	2	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	220	14	12	14	21	21	18	16	23	22	19	13	27	44	8	4	5	7	6	7	9	6	6	12	18	14	12	22	17	19	4	
	Males	124	7	5	8	13	14	8	12	10	10	12	8	17	26	3	3	2	3	2	1	6	4	4	8	7	11	8	11	13	10	2	
Tuscola	Total	95	7	7	6	8	7	10	4	13	12	7	5	10	17	5	1	3	4	4	6	3	2	2	4	11	3	4	11	4	9	2	
	Males	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Females	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Van Buren	Total	250	19	19	18	24	17	23	17	25	29	22	17	1	68	8	13	9	10	10	9	11	9	9	10	12	18	11	13	7	20	3	
	Males	134	8	13	12	10	10	10	13	9	14	17	9	8	40	5	3	3	4	4	3	6	3	5	7	8	11	7	8	3	11	3	
	Females	116	11	6	7	8	14	7	10	8	11	12	13	9	28	3	10	6	6	6	5	6	4	3	4	7	4	7	4	5	9	0	
Washtenaw	Total	307	17	19	26	31	16	25	20	23	36	20	36	38	86	2	7	7	11	15	10	5	8	22	16	13	14	21	22	19	24	5	
	Males	170	9	12	13	21	9	12	13	12	21	4	21	23	50	2	3	5	9	7	2	2	3	13	8	5	5	5	15	13	8	16	4
	Females	137	8	7	13	10	7	13	7	11	15	16	15	15	36	0	4	2	2	8	8	3	5	9	8	8	9	6	9	11	8	1	
	Total	355	26	25	32	23	28	31	19	31	35	25	31	51	63	9	10	8	12	18	10	8	7	13	20	17	19	26	30	35	46	4	
	Males	213	11	21	24	14	18	15	13	17	17	16	15	32	40	5	3	6	5	13	4	3	4	8	11	10	10	20	19	23	27	2	
	Females	142	15	4	8	9	8	16	6	14	18	9	16	19	23	4	7	2	7	5	5	3	5	9	7	9	6	11	12	19	2	2	

Table 44.—CONCLUDED.—Deaths by counties, by sex, by months, and by ages, 1893.

Counties.	Sex.	Year, 1893.	Months, 1893.												Ages in periods of years, 1893.																			
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unknown.	
Wayne	Total	3,834	269	264	369	268	277	246	405	363	306	316	298	448	5	1535	161	67	109	174	175	170	151	124	124	124	142	140	151	152	118	151	66	
	Males	2,086	139	140	202	152	157	133	220	196	178	174	164	227	4	856	72	31	50	100	108	88	80	64	75	82	81	74	75	85	62	71	32	
	Females	1,741	129	124	166	116	120	113	185	167	127	142	133	219	1	673	88	36	59	74	67	82	71	60	49	42	61	66	76	67	56	80	34	
	Unknown	7	1	1	1	1	1	1	1	1	1	1	1	1	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wexford	Total	91	4	5	8	5	6	5	11	8	11	9	6	13	1	32	6	3	4	6	2	8	2	4	4	2	4	1	3	3	4	2	1	
	Males	45	1	2	3	2	4	2	5	3	4	8	5	6	1	16	2	1	1	3	2	4	2	2	2	1	2	1	2	2	1	2	1	
	Females	46	3	3	5	3	2	3	6	5	7	1	1	7	1	16	4	2	3	3	4	4	2	2	2	1	2	1	1	1	1	3		

DEATH-RATES OF CHILDREN UNDER FIVE YEARS OF AGE, BY COUNTIES, 1893.

(State: Deaths of children under five years in 1893 per 1,000 population of that age in 1890, 31.4.)

Over fifty per cent above the average:—Alpena, 47.5; Baraga, 47.9; Dickinson, Iron, Marquette, and Menominee (taken together since Dickinson was formed from the other three since the census of 1890), 50.1; Gogebic, 85.1; Houghton, 63.3; Keweenaw, 51.3; Luce, 64.5; Otsego, 50.0; Wayne, 47.8.

Less than fifty per cent above the average:—Bay, 42.0; Benzie, 31.4; Delta, 45.7; Huron, 31.5; Jackson, 33.3; Kent, 35.1; Missaukee, 31.2; Ontonagon, 41.7; Saginaw, 37.2; St. Clair, 32.3.

Less than fifty per cent below the average:—Alcona, 29.6; Alger, 28.4; Allegan, 25.9; Arenac, 19.8; Barry, 18.2; Berrien, 23.2; Branch, 21.4; Calhoun, 22.7; Cass, 20.0; Charlevoix, 16.1; Cheboygan, 28.5; Chippewa, 27.0; Clare, 26.6; Clinton, 16.7; Eaton, 18.6; Emmet, 23.4; Genesee, 28.1; Gladwin, 21.8; Grand Traverse, 28.0; Gratiot, 20.1; Ingham, 28.6; Ionia, 19.3; Isosco, 22.0; Isabella, 18.1; Kalamazoo, 30.8; Kalkaska, 30.8; Lake, 16.3; Leelanau, 24.7; Leawee, 22.0; Livingston, 17.6; Mackinac, 26.9; Macomb, 21.4; Manistee, 28.7; Mason, 30.5; Mecosta, 20.4; Midland, 20.8; Monroe, 26.2; Montcalm, 18.9; Montmorency, 22.8; Muskegon, 28.2; Oceana, 16.6; Oscoda, 17.3; Ottawa, 27.1; Presque Isle, 28.9; Sanilac, 21.4; Schoolcraft, 25.7; Shiawassee, 18.4; St. Joseph, 20.3; Tuscola, 17.5; Van Buren, 27.6; Washtenaw, 17.0; Wexford, 22.1.

Over fifty per cent below the average:—Antrim, 15.0; Crawford, 13.2; Hillsdale, 15.0; Lapeer, 13.0; Manitou, 0; Newaygo, 9.5; Oakland, 14.0; Ogemaw, 11.5; Oscoda, 13.6; Rosecommon, 8.4.

Table 45.—*Exhibiting, by sex and by age, in periods of years, the number of persons returned as having died in Michigan during the year 1893. (Still-births included.)*

Ages in periods of years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
All ages.....	Total.....	21,982	1,413	1,454	1,789	1,668	1,744	1,616	1,895	2,042	2,166	1,909	1,818	2,605	63
	Males.....	11,772	735	748	961	895	952	891	930	1,096	1,194	1,028	969	1,345	28
	Females.....	10,142	671	699	823	769	789	720	761	941	969	874	843	1,251	32
	Unknown.....	68	7	7	5	4	3	5	4	5	3	7	6	9	3
Still-births.....	Total.....	1,019	67	69	98	91	87	74	90	90	81	84	84	103	3
	Males.....	572	31	42	58	51	52	38	53	51	46	48	50	52	..
	Females.....	398	31	23	35	37	33	33	34	37	33	30	28	44	..
	Unknown.....	49	5	4	3	3	2	3	3	2	2	6	6	7	3
Under 1*.....	Total.....	4,354	234	285	340	276	254	270	374	634	573	425	283	394	12
	Males.....	2,413	121	154	202	151	144	163	207	341	314	243	158	212	3
	Females.....	1,925	112	129	136	124	109	105	166	290	259	181	125	180	9
	Unknown.....	16	1	2	2	1	1	2	1	3	.....	1	.....	2	..
Under 5*.....	Total.....	6,483	373	419	517	436	418	413	542	847	828	597	454	574	15
	Males.....	3,516	195	214	299	233	228	235	306	449	454	335	258	305	5
	Females.....	2,900	176	203	216	202	189	178	235	395	374	261	196	267	10
	Unknown.....	17	2	2	2	1	1	2	1	3	.....	1	.....	2	..
Under 1†.....	Total.....	5,373	301	354	436	367	341	344	464	724	654	509	367	497	15
	Males.....	2,985	152	196	260	202	196	201	260	392	360	291	208	264	3
	Females.....	2,323	143	152	171	161	142	138	200	327	292	211	153	224	9
	Unknown.....	65	6	6	5	4	3	5	4	5	2	7	6	9	3
Under 5†.....	Total.....	7,452	440	488	613	527	505	487	632	937	909	681	538	677	18
	Males.....	4,088	226	256	357	284	280	273	359	500	500	383	308	357	5
	Females.....	3,298	207	226	251	239	222	209	269	432	407	291	224	311	10
	Unknown.....	66	7	6	5	4	3	5	4	5	2	7	6	9	3
5 to 10.....	Total.....	919	69	70	76	71	90	70	80	75	81	71	70	96	..
	Males.....	444	27	38	37	33	42	37	29	45	47	31	36	42	..
	Females.....	474	42	32	39	38	48	33	51	30	33	40	34	54	..
	Unknown.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	..
10 to 15.....	Total.....	562	28	40	53	40	43	59	53	61	40	40	52	53	..
	Males.....	251	15	15	20	23	17	29	25	32	17	18	18	22	..
	Females.....	311	13	25	33	17	26	30	28	29	23	22	34	31	..
	Unknown.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
15 to 20.....	Total.....	784	53	63	70	56	64	62	56	59	72	73	71	83	2
	Males.....	369	30	28	29	29	30	25	30	33	36	28	33	35	3
	Females.....	415	23	37	41	27	34	37	26	26	36	45	38	45	..
	Unknown.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..

* Still-births not included.

† Still-births included.

Table 45.—CONTINUED.—Deaths by periods of age, sex and months.

Ages in periods of years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
20 to 25 -----	Total	1,004	82	67	81	81	108	69	84	88	99	71	74	103	2
	Males	499	39	31	34	38	57	31	44	50	50	35	37	53	---
	Females	505	43	36	47	43	46	38	40	38	49	36	37	50	2
25 to 30 -----	Total	835	59	52	84	68	74	57	64	65	78	91	63	78	2
	Males	414	34	23	35	28	37	26	40	27	46	49	33	35	1
	Females	421	25	29	49	40	37	31	24	38	32	42	30	43	1
30 to 35 -----	Total	822	50	44	71	83	73	59	64	60	76	67	83	90	2
	Males	410	23	25	31	39	31	26	33	29	44	36	45	42	1
	Females	412	27	19	40	44	42	33	26	31	32	31	38	48	1
35 to 40 -----	Total	775	43	46	70	76	56	68	58	49	66	64	76	96	2
	Males	362	17	21	25	36	27	37	23	25	35	35	34	41	1
	Females	413	26	25	45	40	29	31	35	24	31	29	42	55	1
40 to 45 -----	Total	658	38	49	59	58	60	47	38	54	59	56	65	73	2
	Males	321	22	24	26	29	27	25	19	33	28	29	27	32	---
	Females	337	16	25	33	29	33	22	19	21	31	27	38	41	2
45 to 50 -----	Total	711	43	47	49	61	52	49	56	50	63	81	63	91	1
	Males	390	26	24	31	30	25	25	33	25	42	46	37	45	1
	Females	321	17	23	18	31	27	24	23	25	21	35	26	46	---
50 to 55 -----	Total	775	51	50	60	76	58	66	72	62	52	66	59	101	2
	Males	436	26	30	34	46	38	37	33	33	30	35	29	59	1
	Females	339	25	20	26	30	20	29	34	29	22	31	30	42	1
55 to 60 -----	Total	846	61	63	75	58	63	71	54	64	68	77	66	119	2
	Males	463	32	32	43	33	43	43	23	32	36	39	33	63	1
	Females	373	29	31	32	25	20	28	26	32	32	38	33	56	1
60 to 65 -----	Total	876	53	51	76	53	78	76	59	46	72	60	89	154	4
	Males	463	29	24	42	29	44	43	32	26	28	33	45	87	1
	Females	408	24	27	34	29	34	33	27	20	44	27	44	67	3
65 to 70 -----	Total	1,075	53	78	69	80	99	90	74	101	85	101	90	151	4
	Males	619	30	43	41	46	49	63	32	59	43	53	53	85	2
	Females	456	23	35	28	34	50	27	42	42	37	48	37	66	2
70 to 75 -----	Total	1,205	74	85	87	90	107	74	74	86	115	100	124	134	5
	Males	700	43	42	51	57	67	47	50	43	75	50	65	103	2
	Females	505	31	43	36	33	40	27	24	33	40	50	59	31	3
75 to 80 -----	Total	1,018	74	49	83	70	83	77	81	69	82	33	89	178	---
	Males	581	39	23	51	47	50	43	43	35	46	47	55	92	---
	Females	437	35	26	32	23	33	29	38	34	36	36	34	86	---

Table 45.—CONCLUDED.—Deaths by periods of age, sex and months.

Ages in periods of years,	Sex.	Year, 1893.	Months, 1893.											
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December, Unknown.
80 to 85	Total	780	61	50	52	63	74	65	52	52	59	65	64	122 1
	Males	457	37	31	33	33	52	35	34	33	28	35	36	70 ..
	Females	323	24	19	19	30	22	30	18	19	31	30	28	52 1
85 to 90	Total	402	33	27	26	19	21	26	24	28	32	24	43	97 2
	Males	228	19	17	16	12	12	18	11	16	20	14	22	50 1
	Females	174	14	10	10	7	9	8	13	12	12	10	21	47 1
90 to 95	Total	138	12	10	12	7	14	12	4	9	11	10	15	22 ..
	Males	69	7	3	6	3	10	6	4	2	7	6	5	10 ..
	Females	69	5	7	6	4	4	6	...	7	4	4	10	12 ..
95 to 100	Total	21	2	2	...	1	4	1	1	2	4	2	...	2 ..
	Males	10	1	1	...	...	3	...	...	...	2	1	...	2 ..
	Females	11	1	1	...	1	1	1	1	2	2	1	...	...
100 and over	Total	7	1	...	1	...	...	...	...	1	...	...	...	4 ..
	Males	4	...	...	1	...	...	...	...	...	...	...	...	3 ..
	Females	3	1	...	...	...	...	...	...	1	...	...	...	1 ..
Unknown	Total	317	23	23	22	25	18	31	15	24	43	26	24	31 12
	Males	184	13	14	13	15	11	17	8	13	29	15	13	14 9
	Females	132	10	8	9	10	7	14	7	11	14	11	11	17 3
	Unknown	1	...	1	...	...	...	...	...	...	...	...	...	...

Tables 45 and 46 give the facts in detail in regard to the number of persons of each sex who died at all ages during each month of the year 1893. Table 45 is condensed from Table 46, and states the ages in periods of five years. Table 46 gives the number for each year of age separately, and also the number of deaths at each month of age for children dying under the age of one year. These tables, as printed in the present report and that for the preceding year, differ from those previously published in that the number of still-births is separately stated, and the number of deaths under one year of age, and also under five years of age, are stated both inclusive and exclusive of still-births. The former statement is made in order that the data may be readily comparable with former reports; the latter, because for many purposes it is important to eliminate still-births, as, when included, they unduly increase the number of deaths for the first month and for the first year of age as compared with those of subsequent years. The death-rates of children born alive are the important points of consideration in discussing infant mortality; their variations at different ages serve not only to mark the dangerous periods of development, but suggest the necessity of special study of the management of infants and the treatment of the diseases to which they are especially liable at those ages, and thus may bring about a marked lowering of this special class of mortality. The introduction of still-births into this class of deaths adds a large number of deaths dependent on entirely different causes for the most part, and not subject to amelioration by the same sanitary and therapeutic measures.

Table 46.—*Exhibiting, by sex and by months, the number returned as having died in Michigan during the year 1893 at each and every age, the age stated in twelfths of a year for those under one year, and in years for those over one year of age. (Still-births included.)*

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
All ages.....	Total	21,982	1,413	1,454	1,789	1,668	1,744	1,616	1,695	2,042	2,166	1,969	1,818	2,605	63
	Males	11,772	735	748	961	895	952	891	930	1,096	1,194	1,028	969	1,345	28
	Females	10,142	671	699	823	769	789	720	761	911	999	874	813	1,251	32
	Unknown	68	7	7	5	4	3	5	4	5	3	7	6	9	3
Still-births.....	Total	1,019	67	69	96	91	87	74	90	90	81	84	84	103	3
	Males	572	31	42	58	51	52	38	53	51	46	48	50	52	---
	Females	398	31	23	35	37	33	33	34	37	33	30	28	44	---
	Unknown	49	5	4	3	3	2	3	3	2	2	6	6	7	3
Under 1-12*.....	Total	1,370	83	116	128	116	105	89	105	128	116	124	107	150	5
	Males	765	43	56	74	64	63	56	52	72	69	61	71	82	2
	Females	197	40	60	51	51	41	33	52	55	47	62	36	68	3
	Unknown	8	---	---	1	1	1	---	1	1	---	1	---	2	---
Under 1-12†.....	Total	2,389	150	185	222	207	192	163	195	218	197	208	191	253	8
	Males	1,337	74	98	132	115	115	94	105	123	115	109	121	134	2
	Females	995	71	83	86	88	74	66	86	92	80	92	64	110	3
	Unknown	57	5	4	4	4	3	3	4	3	2	7	6	9	3
1-12.....	Total	398	20	29	34	35	25	27	27	54	54	33	26	32	2
	Males	281	14	17	17	20	20	9	21	27	31	24	16	15	---
	Females	165	6	11	16	15	5	18	6	27	23	9	10	17	2
	Unknown	2	---	1	1	---	---	---	---	---	---	---	---	---	---
2-12.....	Total	333	31	18	25	21	20	25	28	61	57	41	19	37	---
	Males	225	16	12	19	13	10	13	16	34	36	28	7	19	---
	Females	157	14	6	6	8	10	10	12	27	21	18	12	18	---
	Unknown	1	1	---	---	---	---	---	---	---	---	---	---	---	---
3-12.....	Total	859	16	17	24	17	12	30	39	62	50	33	33	25	1
	Males	192	9	8	18	8	9	21	19	30	23	19	16	12	---
	Females	167	7	9	6	9	3	9	20	32	27	14	17	13	1
	Unknown	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-12.....	Total	319	20	12	23	13	13	18	31	62	43	39	18	27	---
	Males	175	11	7	11	5	7	12	17	32	22	27	9	15	---
	Females	144	9	5	12	8	6	6	14	30	21	12	9	12	---
	Unknown	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5-12.....	Total	306	18	17	13	4	8	13	30	57	58	32	18	36	2
	Males	170	5	9	9	1	3	10	21	33	37	13	8	20	1
	Females	135	13	8	4	3	5	2	9	24	21	19	10	16	1
	Unknown	1	---	---	---	---	---	1	---	---	---	---	---	---	---

* Still-births not included.

† Still-births included.

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
6-12.....	Total	289	13	16	24	14	15	11	34	50	45	27	16	24	.....
	Males	158	7	10	16	5	5	5	17	30	27	15	9	13	.....
	Females	130	6	6	8	9	10	5	17	20	18	12	7	12	.....
	Unknown	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
7-12.....	Total	207	4	10	21	12	11	14	23	33	34	19	18	7	1
	Males	107	2	5	11	9	5	8	15	15	16	9	8	4	.....
	Females	99	2	5	10	3	6	6	8	17	18	10	10	3	1
	Unknown	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
8-12.....	Total	201	7	18	14	14	9	15	18	36	36	18	4	12	.....
	Males	104	4	11	6	7	5	10	11	16	16	10	2	6	.....
	Females	96	3	7	8	7	4	5	7	19	20	8	2	6	.....
	Unknown	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
9-12.....	Total	188	6	11	14	14	16	10	15	32	29	16	8	17	.....
	Males	112	4	7	9	9	8	9	6	24	11	11	2	12	.....
	Females	76	2	4	5	5	8	1	9	8	18	5	6	5	.....
10-12.....	Total	168	2	10	10	8	13	11	12	30	25	25	10	12	.....
	Males	85	1	4	6	6	7	4	7	13	11	13	7	6	.....
	Females	82	1	5	4	2	6	7	5	17	14	12	3	6	.....
	Unknown	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11-12.....	Total	166	14	11	12	8	7	7	12	29	26	18	6	15	1
	Males	89	5	8	6	4	2	4	5	15	15	13	3	9	.....
	Females	77	9	3	6	4	5	3	7	14	11	5	3	6	1
1.....	Total	952	59	64	75	72	66	66	85	101	124	88	75	75	2
	Males	532	36	33	44	39	36	33	47	55	74	51	44	33	2
	Females	419	22	31	31	33	30	33	38	46	50	37	31	37	.....
	Unknown	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2.....	Total	500	33	34	44	33	37	34	37	56	65	49	41	33	1
	Males	257	15	18	19	18	21	18	24	27	30	25	27	15	.....
	Females	243	18	16	25	15	16	16	13	29	35	24	14	21	1
3.....	Total	343	30	16	34	34	32	19	25	35	35	18	26	39	.....
	Males	176	16	4	21	17	15	9	15	16	19	8	12	24	.....
	Females	167	14	12	13	17	17	10	10	19	16	10	14	15	.....
4.....	Total	284	17	20	24	21	29	24	21	21	31	17	29	30	.....
	Males	138	7	5	13	8	12	12	13	10	17	8	17	16	.....
	Females	146	10	15	11	13	17	12	8	11	14	9	12	14	.....

Table 46.—CONTINUED—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
5.....	Total	231	9	17	16	21	21	21	19	29	24	13	18	23	.....
	Males	115	2	9	6	10	12	11	7	18	15	6	7	12	.....
	Females	115	7	8	10	11	9	10	12	11	8	7	11	11	.....
	Unknown	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
6.....	Total	219	17	12	18	14	18	14	23	13	28	21	19	22	.....
	Males	110	9	7	8	9	7	6	8	7	17	10	12	10	.....
	Females	109	8	5	10	5	11	8	15	6	11	11	7	12	.....
7.....	Total	154	15	10	13	10	24	15	12	11	11	13	7	13	.....
	Males	84	6	6	8	5	12	11	4	5	6	7	5	9	.....
	Females	70	9	4	5	5	12	4	8	6	5	6	2	4	.....
8.....	Total	169	11	15	19	14	12	12	14	14	8	14	17	19	.....
	Males	78	4	8	11	4	5	7	8	10	2	7	8	4	.....
	Females	91	7	7	8	10	7	5	6	4	6	7	9	15	.....
9.....	Total	146	17	16	10	12	15	8	12	8	10	10	9	19	.....
	Males	57	6	8	4	5	6	2	2	5	7	1	4	7	.....
	Females	89	11	8	6	7	9	6	10	3	3	9	5	12	.....
10.....	Total	129	5	8	13	5	10	11	17	12	7	12	15	14	.....
	Males	59	3	2	3	3	4	8	12	6	4	6	5	3	.....
	Females	70	2	6	10	2	6	3	5	6	3	6	10	11	.....
11.....	Total	97	2	11	7	7	6	10	9	14	8	5	9	9	.....
	Males	44	1	7	3	2	3	2	1	9	4	2	5	5	.....
	Females	53	1	4	4	5	3	8	8	5	4	3	4	4	.....
12.....	Total	116	8	7	12	11	11	16	7	12	7	8	7	10	.....
	Males	55	3	1	5	9	4	8	3	7	3	4	2	6	.....
	Females	61	5	6	7	2	7	8	4	5	4	4	5	4	.....
13.....	Total	108	2	7	13	13	6	9	11	13	7	8	12	7	.....
	Males	42	1	2	7	6	2	4	5	4	3	2	3	3	.....
	Females	66	1	5	6	7	4	5	6	9	4	6	9	4	.....
14.....	Total	112	11	7	8	4	10	13	9	10	11	7	9	13	.....
	Males	51	7	3	2	3	4	7	4	6	3	4	3	5	.....
	Females	61	4	4	6	1	6	6	5	4	8	3	6	8	.....
15.....	Total	103	5	7	12	10	5	6	8	12	11	4	8	15	.....
	Males	51	4	3	6	5	1	4	4	8	10	1	1	4	.....
	Females	52	1	4	6	5	4	2	4	4	1	3	7	11	.....

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
16.....	Total	136	11	9	12	9	16	9	6	8	10	13	16	17	....
	Males	70	8	4	7	5	7	3	2	4	5	4	9	12	....
	Females	66	3	5	5	4	9	6	4	4	5	9	7	5	....
17.....	Total	158	9	16	16	19	16	13	9	14	9	10	17	10	....
	Males	75	6	8	4	7	12	6	6	10	2	4	9	1	....
	Females	83	3	8	12	12	4	7	3	4	7	6	8	9	....
18.....	Total	189	13	16	17	12	13	14	19	12	17	19	11	25	1
	Males	84	6	4	9	8	4	5	9	7	10	5	6	10	1
	Females	105	7	12	8	4	9	9	10	5	7	14	5	15	....
19.....	Total	198	15	15	13	6	14	20	14	13	25	27	19	16	1
	Males	89	6	7	3	4	6	7	9	4	9	14	8	11	1
	Females	109	9	8	10	2	8	13	5	9	16	13	11	5	....
20.....	Total	188	12	12	17	18	19	20	18	18	14	12	8	18	2
	Males	99	4	8	8	7	12	11	7	10	7	8	6	11	....
	Females	89	8	4	9	11	7	9	11	8	7	4	2	7	2
21.....	Total	207	14	9	20	16	22	9	16	17	25	18	23	18	....
	Males	109	6	3	8	9	14	4	9	11	14	10	12	9	....
	Females	98	8	6	12	7	8	5	7	6	11	8	11	9	....
22.....	Total	217	22	13	14	17	24	17	14	19	25	16	15	21	....
	Males	98	12	9	5	11	11	6	5	8	11	9	4	7	....
	Females	119	10	4	9	6	13	11	9	11	14	7	11	14	....
23.....	Total	196	16	16	16	15	23	15	20	15	17	8	12	23	....
	Males	104	8	9	7	6	13	6	12	11	8	4	7	13	....
	Females	92	8	7	9	9	10	9	8	4	9	4	5	10	....
24.....	Total	196	18	17	14	15	15	8	16	19	18	17	16	23	....
	Males	89	9	2	6	5	7	4	11	10	10	4	8	13	....
	Females	107	9	15	8	10	8	4	5	9	8	13	8	10	....
25.....	Total	206	6	16	16	15	17	18	9	21	28	18	18	24	....
	Males	94	3	8	7	4	7	5	6	7	17	10	12	8	....
	Females	112	3	8	9	11	10	13	3	14	11	8	6	16	....
26.....	Total	183	18	12	27	17	12	9	13	13	13	20	12	16	1
	Males	90	9	3	12	9	6	4	8	4	10	10	5	9	1
	Females	93	9	9	15	8	6	5	5	9	3	10	7	7	....
27.....	Total	151	10	9	17	9	14	9	12	11	12	25	11	11	1
	Males	77	8	4	8	2	7	7	6	5	6	14	5	5	....
	Females	74	2	5	9	7	7	2	6	6	6	11	6	6	1

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
28	Total	155	15	4	16	14	15	11	12	14	16	15	9	14	---
	Males	79	7	2	6	6	9	5	9	8	7	7	5	8	---
	Females	76	8	2	10	8	6	6	3	6	9	8	4	6	---
29	Total	140	10	11	8	13	16	10	18	6	9	13	13	13	---
	Males	74	7	6	2	7	8	5	11	3	6	8	6	5	---
	Females	66	3	5	6	6	8	5	7	3	3	5	7	8	---
30	Total	181	5	10	17	19	14	9	14	17	20	16	22	18	---
	Males	98	4	8	8	10	7	2	9	10	16	7	10	7	---
	Females	83	1	2	9	9	7	7	5	7	4	9	12	11	---
31	Total	130	6	5	11	17	12	14	10	8	10	13	10	14	---
	Males	87	2	2	5	11	5	7	6	4	5	6	6	8	---
	Females	63	4	3	6	6	7	7	4	4	5	7	4	6	---
32	Total	166	11	5	20	12	10	11	14	13	16	12	26	16	---
	Males	77	4	2	8	5	4	6	7	7	6	5	13	10	---
	Females	89	7	3	12	7	6	5	7	6	10	7	13	6	---
33	Total	178	17	10	7	18	20	10	17	11	16	17	11	23	1
	Males	92	8	5	3	8	8	4	10	3	10	13	6	13	1
	Females	86	9	5	4	10	12	6	7	8	6	4	5	10	---
34	Total	167	11	14	16	17	17	15	9	11	14	9	14	19	1
	Males	76	5	8	7	5	7	7	6	5	7	5	10	4	---
	Females	91	6	6	9	12	10	8	3	6	7	4	4	15	1
35	Total	158	9	10	16	15	12	19	11	10	10	9	19	18	---
	Males	77	4	5	6	8	6	13	7	6	3	5	6	8	---
	Females	81	5	5	10	7	6	6	4	4	7	4	13	10	---
36	Total	176	13	13	14	21	12	13	15	11	15	14	17	13	---
	Males	88	5	7	9	10	8	4	7	4	7	10	9	6	---
	Females	90	8	6	5	11	4	9	8	7	8	4	8	12	---
37	Total	135	9	8	15	13	11	8	9	5	12	19	8	17	1
	Males	57	3	4	4	6	4	4	2	4	7	8	5	6	---
	Females	78	6	4	11	7	7	4	7	1	5	11	3	11	1
38	Total	166	7	11	12	8	15	15	14	15	12	13	22	22	---
	Males	78	2	3	3	4	8	7	6	6	7	8	10	14	---
	Females	88	5	8	9	4	7	8	8	9	5	5	12	8	---
39	Total	140	10	4	13	19	6	13	9	8	17	9	10	21	1
	Males	64	3	2	3	8	1	9	6	5	11	4	4	7	1
	Females	76	7	2	10	11	5	4	3	3	6	5	6	14	---

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
40.....	Total	160	12	8	15	14	18	11	4	12	13	11	22	19	1
	Males.....	81	7	4	6	8	8	7	2	7	8	4	9	11	---
	Females...	79	5	4	9	6	10	4	2	5	5	7	13	8	1
41.....	Total	106	6	4	5	14	11	8	2	11	8	9	11	17	---
	Males.....	54	4	1	3	6	4	4	1	9	3	5	6	8	---
	Females...	52	2	3	2	8	7	4	1	2	5	4	5	9	---
42.....	Total	145	5	11	17	12	9	12	10	15	16	11	12	15	---
	Males.....	70	2	5	6	7	2	6	4	10	9	6	5	8	---
	Females...	75	3	6	11	5	7	6	6	5	7	5	7	7	---
43.....	Total	131	8	14	10	9	14	10	13	10	12	12	11	7	1
	Males.....	53	5	6	5	5	9	3	5	3	3	4	4	1	---
	Females...	78	3	8	5	4	5	7	8	7	9	8	7	6	1
44.....	Total	116	7	12	12	9	8	6	9	6	10	13	9	15	---
	Males.....	63	4	8	6	3	4	5	7	4	5	10	3	4	---
	Females...	53	3	4	6	6	4	1	2	2	5	3	6	11	---
45.....	Total	145	10	11	13	16	14	13	8	10	12	14	12	12	---
	Males.....	86	5	6	7	9	9	6	6	6	8	10	8	6	---
	Females...	59	5	5	6	7	5	7	2	4	4	4	4	6	---
46.....	Total	99	11	8	6	3	8	5	9	7	8	14	8	12	---
	Males.....	52	4	3	4	1	3	2	7	3	5	8	5	7	---
	Females...	47	7	5	2	2	5	3	2	4	3	6	3	5	---
47.....	Total	154	7	10	10	13	8	10	13	15	13	14	18	23	---
	Males.....	77	3	5	7	7	4	5	7	8	8	5	11	7	---
	Females...	77	4	5	3	6	4	5	6	7	5	9	7	16	---
48.....	Total	168	12	9	15	15	12	12	11	7	15	23	14	23	---
	Males.....	90	8	6	9	7	6	7	4	2	12	11	7	11	---
	Females...	78	4	3	6	8	6	5	7	5	3	12	7	12	---
49.....	Total	145	8	9	5	14	10	9	15	11	15	16	11	21	1
	Males.....	85	6	4	4	6	3	5	9	6	9	12	6	14	1
	Females...	60	2	5	1	8	7	4	6	5	6	4	5	7	---
50.....	Total	155	10	12	11	10	17	11	13	12	13	8	15	22	1
	Males.....	83	5	5	6	4	11	5	8	8	7	2	9	12	1
	Females...	72	5	7	5	6	6	6	5	4	6	6	6	10	---
51.....	Total	113	6	6	10	14	4	12	9	9	9	14	5	15	---
	Males.....	71	5	4	7	6	2	7	7	5	8	11	1	8	---
	Females...	42	1	2	3	8	2	5	2	4	1	3	4	7	---

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year. 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
52.....	Total.....	184	13	10	21	22	13	13	19	13	14	11	16	19	----
	Males.....	89	6	5	10	15	10	3	6	5	9	4	7	9	----
	Females.....	95	7	5	11	7	3	10	13	8	5	7	9	10	----
53.....	Total.....	156	7	9	9	16	12	18	14	14	6	12	12	26	1
	Males.....	97	2	6	6	12	9	12	11	8	3	5	6	17	----
	Females.....	59	5	3	3	4	3	6	3	6	3	7	6	9	1
54.....	Total.....	167	15	13	9	14	12	12	17	14	10	21	11	19	----
	Males.....	96	8	10	5	9	6	10	6	7	3	13	6	13	----
	Females.....	71	7	3	4	5	6	2	11	7	7	8	5	6	----
55.....	Total.....	147	12	17	15	10	9	12	8	12	14	12	10	16	----
	Males.....	79	10	6	7	5	5	8	4	8	8	6	4	8	----
	Females.....	68	2	11	8	5	4	4	4	4	6	6	6	8	----
56.....	Total.....	175	10	11	15	12	15	19	8	16	5	15	19	30	----
	Males.....	103	4	9	9	12	9	14	4	7	3	5	10	17	----
	Females.....	72	6	2	6	----	6	5	4	9	2	10	9	13	----
57.....	Total.....	175	14	12	16	15	18	13	13	11	13	17	6	26	1
	Males.....	96	5	8	10	8	14	8	4	5	4	11	4	15	----
	Females.....	79	9	4	6	7	4	5	9	6	9	6	2	11	1
58.....	Total.....	164	13	12	8	11	12	14	8	15	15	17	19	19	1
	Males.....	85	8	2	7	7	5	8	3	7	11	8	10	8	1
	Females.....	79	5	10	1	4	7	6	5	8	4	9	9	11	----
59.....	Total.....	185	12	11	21	10	14	13	17	10	21	16	12	28	----
	Males.....	105	5	7	15	6	10	5	13	5	10	9	5	15	----
	Females.....	80	7	4	6	4	4	8	4	5	11	7	7	13	----
60.....	Total.....	186	8	3	13	9	17	15	16	5	23	16	19	36	1
	Males.....	104	5	1	9	6	11	9	9	3	9	11	12	18	1
	Females.....	82	3	2	9	3	6	6	7	2	14	5	7	18	----
61.....	Total.....	125	4	12	8	9	6	13	8	11	7	9	12	25	1
	Males.....	63	2	5	6	4	3	7	3	7	1	6	6	13	----
	Females.....	62	2	7	2	5	3	6	5	4	6	3	6	12	1
62.....	Total.....	197	19	15	17	17	16	15	11	13	9	11	18	36	----
	Males.....	103	10	6	10	10	10	8	7	9	3	7	5	18	----
	Females.....	94	9	9	7	7	6	7	4	4	6	4	13	18	----
63.....	Total.....	191	10	9	15	16	22	16	18	6	16	15	20	27	1
	Males.....	105	5	8	4	7	9	11	12	4	7	9	9	20	----
	Females.....	86	5	1	11	9	13	5	6	2	9	6	11	7	1

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
64	Total	177	12	12	18	7	17	17	6	11	17	9	20	30	1
	Males	93	7	4	13	2	11	8	1	3	8	5	13	18	---
	Females	84	5	8	5	5	6	9	5	8	9	4	7	12	1
65	Total	245	10	17	20	21	22	22	15	23	14	26	18	35	2
	Males	141	4	11	11	11	12	14	8	12	8	17	11	21	1
	Females	104	6	6	9	10	10	8	7	11	6	9	7	14	1
66	Total	190	11	14	12	12	16	16	9	18	14	13	24	30	1
	Males	116	6	11	10	7	9	7	5	12	10	6	16	17	---
	Females	74	5	3	2	5	7	9	4	6	4	7	8	13	1
67	Total	206	5	22	10	22	21	16	13	18	21	17	17	24	---
	Males	116	2	14	6	13	9	12	4	12	9	11	10	14	---
	Females	90	3	8	4	9	12	4	9	6	12	6	7	10	---
68	Total	223	18	11	10	14	20	22	19	18	21	28	14	27	1
	Males	127	18	7	7	8	9	17	7	8	12	14	10	14	1
	Females	96	5	4	3	6	11	5	12	10	9	14	4	13	---
69	Total	211	9	14	17	11	20	14	18	24	15	17	17	35	---
	Males	119	5	5	7	7	10	13	8	15	9	10	11	19	---
	Females	92	4	9	10	4	10	1	10	9	6	7	6	16	---
70	Total	228	16	15	16	13	20	13	16	19	21	17	31	31	---
	Males	132	12	5	7	6	13	12	10	11	15	7	17	17	---
	Females	96	4	10	9	7	7	1	6	8	6	10	14	14	---
71	Total	184	7	14	12	14	16	7	9	18	12	11	25	38	1
	Males	105	3	5	7	9	13	4	8	10	8	4	14	19	1
	Females	79	4	9	5	5	3	3	1	8	4	7	11	19	---
72	Total	282	19	19	24	21	27	19	16	20	22	26	20	48	1
	Males	156	10	10	13	15	14	11	9	9	15	10	14	26	---
	Females	126	9	9	11	6	13	8	7	11	7	16	6	22	1
73	Total	255	17	15	23	20	23	16	18	14	32	20	19	37	1
	Males	149	10	8	16	15	8	11	14	11	18	13	5	20	---
	Females	106	7	7	7	5	15	5	4	3	14	7	14	17	1
74	Total	256	15	22	12	22	21	19	15	15	28	26	29	30	2
	Males	158	8	14	8	12	19	9	9	7	19	16	15	21	1
	Females	98	7	8	4	10	2	10	6	8	9	10	14	9	1
75	Total	201	15	5	18	19	19	18	11	14	12	14	20	36	---
	Males	122	9	2	12	13	10	11	5	7	9	7	13	24	---
	Females	79	6	3	6	6	9	7	6	7	3	7	7	12	---

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
76.....	Total.....	230	18	10	22	20	10	18	13	26	21	17	21	34	.....
	Males.....	121	9	5	12	15	6	12	9	14	6	8	11	14	.....
	Females.....	109	9	5	10	5	4	6	4	12	15	9	10	20	.....
77.....	Total.....	188	10	9	10	8	21	12	22	9	14	19	16	28	.....
	Males.....	103	3	3	4	2	15	9	14	5	5	14	10	19	.....
	Females.....	85	7	6	6	6	6	3	8	4	9	5	6	19	.....
78.....	Total.....	209	13	17	14	13	15	13	21	9	19	13	25	37	.....
	Males.....	114	6	8	9	10	8	8	9	3	15	8	16	14	.....
	Females.....	95	7	9	5	3	7	5	12	6	4	5	9	23	.....
79.....	Total.....	190	18	8	19	10	18	16	14	11	16	20	7	38	.....
	Males.....	121	12	5	14	7	11	8	11	6	11	10	5	21	.....
	Females.....	69	6	3	5	3	7	8	3	5	5	10	2	12	.....
80.....	Total.....	193	14	12	13	11	20	23	14	15	3	16	13	29	.....
	Males.....	118	9	9	11	6	12	14	11	11	3	6	11	15	.....
	Females.....	75	5	3	2	5	8	9	3	4	5	10	7	14	.....
81.....	Total.....	130	9	7	9	11	14	10	8	9	10	12	11	20	.....
	Males.....	74	4	3	6	4	12	5	2	6	6	6	7	13	.....
	Females.....	56	5	4	3	7	2	5	6	3	4	6	4	7	.....
82.....	Total.....	167	18	10	17	15	11	11	9	9	14	16	14	23	.....
	Males.....	96	12	7	9	8	8	6	5	4	6	10	8	13	.....
	Females.....	71	6	3	8	7	3	5	4	5	8	6	6	10	.....
83.....	Total.....	147	9	11	5	14	16	10	12	9	13	10	13	25	.....
	Males.....	79	6	6	3	7	10	2	10	5	3	5	5	12	.....
	Females.....	68	3	5	2	7	6	8	2	4	5	5	8	13	.....
84.....	Total.....	143	11	10	8	12	13	11	9	10	14	11	8	25	.....
	Males.....	90	6	6	4	8	10	8	6	7	5	8	5	17	.....
	Females.....	53	5	4	4	4	3	3	3	3	9	3	3	8	.....
85.....	Total.....	98	6	8	7	5	5	10	8	6	6	4	11	21	.....
	Males.....	56	4	6	2	4	2	8	5	3	3	3	5	10	.....
	Females.....	42	2	2	5	1	3	2	3	3	3	1	6	11	.....
86.....	Total.....	102	11	6	6	7	7	5	5	7	9	6	12	20	.....
	Males.....	61	5	5	5	4	5	2	1	3	6	5	9	11	.....
	Females.....	41	6	1	1	3	2	3	4	4	3	1	3	9	.....
87.....	Total.....	93	8	4	5	1	1	3	6	5	8	6	9	37	.....
	Males.....	59	5	3	5	1	---	2	3	4	7	4	3	22	.....
	Females.....	34	3	1	---	---	1	1	3	1	1	2	6	15	.....

Table 46.—CONTINUED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
88	Total	56	3	6	---	5	5	3	4	8	6	4	4	8	---
	Males	28	2	2	---	3	4	3	2	5	3	---	1	3	---
	Females	28	1	4	---	2	1	---	2	3	3	4	3	5	---
89	Total	53	5	3	8	1	3	5	1	2	3	4	7	11	---
	Males	24	3	1	4	---	1	3	---	1	1	2	4	4	---
	Females	29	2	2	4	1	2	2	1	1	2	2	3	7	---
90	Total	49	5	2	5	3	2	4	2	2	5	3	7	9	---
	Males	27	2	2	3	1	1	2	2	2	3	2	3	4	---
	Females	22	3	---	2	2	1	2	---	---	2	1	4	5	---
91	Total	24	4	2	2	2	1	1	---	2	3	2	2	3	---
	Males	11	2	1	1	1	1	---	---	---	2	1	---	2	---
	Females	13	2	1	1	1	---	1	---	2	1	1	2	1	---
92	Total	23	---	3	1	2	2	3	---	2	2	1	1	6	---
	Males	8	---	---	---	1	1	3	---	---	2	---	---	1	---
	Females	15	---	3	1	1	1	---	---	2	---	1	1	5	---
93	Total	30	3	3	2	---	6	3	1	2	1	3	4	2	---
	Males	16	3	---	1	---	6	1	1	---	---	2	1	1	---
	Females	14	---	3	1	---	---	2	---	2	1	1	3	1	---
94	Total	12	---	---	2	---	3	1	1	1	---	1	1	2	---
	Males	7	---	---	1	---	1	---	1	---	---	1	1	2	---
	Females	5	---	---	1	---	2	1	---	1	---	---	---	---	---
95	Total	8	---	---	---	---	1	1	---	1	2	2	---	1	---
	Males	4	---	---	---	---	1	---	---	---	1	1	---	1	---
	Females	4	---	---	---	---	---	1	---	1	1	1	---	---	---
96	Total	2	1	---	---	---	---	---	---	---	---	---	---	1	---
	Males	2	1	---	---	---	---	---	---	---	---	---	---	1	---
97	Total	5	1	1	---	1	1	---	---	---	1	---	---	---	---
	Males	2	---	1	---	---	1	---	---	---	---	---	---	---	---
	Females	3	1	---	---	1	---	---	---	---	1	---	---	---	---
98	Total	4	---	---	---	---	2	---	1	---	1	---	---	---	---
	Males	2	---	---	---	---	1	---	---	---	1	---	---	---	---
	Females	2	---	---	---	---	1	---	1	---	---	---	---	---	---
99	Total	2	---	1	---	---	---	---	---	1	---	---	---	---	---
	Females	2	---	1	---	---	---	---	---	1	---	---	---	---	---

Table 46.—CONCLUDED.—Deaths by ages, sex and months.

Age in years.	Sex.	Year, 1893.	Months, 1893.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
100 and over	Total	7	1		1					1				4	
	Males	4			1									3	
	Females	3	1							1				1	
Unknown	Total	317	23	23	22	25	18	31	15	24	43	26	24	31	12
	Males	184	13	14	13	15	11	17	8	13	29	15	13	14	9
	Females	132	10	8	9	10	7	14	7	11	14	11	11	17	3
	Unknown	1		1											

AVERAGE AGE OF DECEDENTS BY NATIVITY.

From Table 46 the statements concerning the average ages at death of each sex, which are given in Table 47, are derived. To allow for the omission of the months in excess of whole years and for the days in excess of whole months in children aged less than one year, one-half year and one-half month respectively are added to the aggregate for each individual of these classes, and the resulting total being divided by the total number of individuals, less those of unknown age, the average age stated in the table is obtained.

Table 47.—By nativity, the average age of decedents in Michigan in 1893, compared with 1891-92, and with the mean of the average ages for the ten-year period, 1883-92. (Still-births included.)

Nativity of decedents.	Average age at death, 1891.			Average age at death, 1892.			Average age at death, 1893.			Mean of average ages, 1883-92.		
	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.
All nativities.....	30.3	31.6	30.1	32.2	32.4	32.0	31.8	32.4	31.1	28.7	29.5	28.5
Native-born.....	24.0	23.9	24.1	24.9	24.5	25.5	24.6	24.5	24.7	22.8	22.4	22.4
Foreign-born.....	53.5	54.8	51.3	52.6	53.0	52.1	53.1	53.8	52.3	50.3	50.6	49.7

The difference between the average ages at death of native-born and foreign-born inhabitants comes largely from the fact that children born of foreign parents are classed among the natives and that the death-rate among children is much higher than among adults. The inclusion of still-births in this table also lowers the average age at death for all nativities, and especially for the native-born as compared with the foreign-born, as no still-births are found in the latter. As an illustration of this fact, the average ages at death were calculated for deaths of all nativities and deaths of the native-born for the year 1893, with omission of still-births, and the figures subjoined may be compared with those stated in the table for the same year.

Average age at death, by nativity, 1893. (Still-births excluded.)

Nativity.	Persons.	Males.	Females.
All nativities	33.3	34.1	32.4
Native-born	26.2	26.3	26.1
Foreign-born (same as stated in Table 47)	53.1	53.8	52.3

COLOR AND NATIVITY OF DECEDENTS, 1893.

Table 48 presents a detailed statement, by counties, of the deaths that occurred in 1893 of each color and race. Of the total number of decedents, 21,982, 21,665, or 98.56 per cent were white; 152 or .69 per cent black; 40 or .18 per cent mulatto; and 104 or .47 per cent Indian. There were also 21 deaths or .10 per cent of the total number in which the color was unspecified. As with births and marriages, the number and ratio of colored deaths is so small, and fluctuates so widely in different years from incidental causes, that minute comparison of the death-rates of the different colors and races for any single year is not advisable. In Table 7, Part I, the number of inhabitants of each color and race is given for the State as determined by the last United States census, and the numbers of marriages, persons married, births and deaths are also exhibited there in convenient form for comparison. Failure to specify color is almost certainly a result of neglect or carelessness on the part of the enumerator, since it is a fact that would be plainly in evidence if he had made a personal inquiry as required by law. Of the 21 deaths in which this return was not properly made, 10 occurred in Ottawa county.

Table 49 shows that the percentage of deaths of foreign-born persons is higher for 1893 than for 1891, 1892 and the ten-year period, 1883-92. This is probably due, as pointed out in the last report, to the increase in the average age of the foreign-born inhabitants, who were not recruited in recent years by the immigration of young adults as much as formerly owing to the general decline in immigration into this country, while the tendency of the native-born population is to a lower average age. In Table 50 the distribution of decedents, classed as native-born and foreign-born, is given for each county in the State. The statements may be compared with the number of inhabitants of each class given in Table 10, Part I.

Table 48.—*Exhibiting, by sex, for the State and counties, the color of decedents, as returned for the year 1893. (Still-births included.)*

State and counties.	All colors, 1893.				White.				Black.			Mulatto.			Indian.			Unknown.			
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Unknown.
State	21,982	11,772	10,142	68	21,665	11,596	10,006	63	152	97	55	40	21	19	104	50	54	21	8	8	5
Alcona	63	30	33	—	63	30	33	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Alger	7	4	3	—	6	3	3	—	—	—	—	—	—	—	1	a	1	—	—	—	—
Allegan	432	221	206	5	423	219	201	3	1	1	—	8	1	2	1	1	4	—	2	2	—
Alpena	228	116	111	1	227	116	111	—	—	—	—	—	—	—	—	—	1	—	1	—	—
Antrim	53	28	25	—	50	28	22	—	—	—	—	—	—	—	3	3	—	—	—	—	—
Arenac	38	21	16	1	37	21	15	1	—	—	—	—	—	—	1	1	—	—	—	—	—
Baraga	44	25	19	—	33	18	15	—	—	—	—	—	—	—	11	7	4	—	—	—	—
Barry	211	104	107	—	211	104	107	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bay	708	364	342	2	705	363	341	1	—	—	—	2	1	1	—	—	1	—	1	—	—
Benzie	65	29	36	—	64	29	35	—	1	—	1	—	—	—	—	—	—	—	—	—	—
Berrien	393	200	188	5	385	195	185	5	7	4	3	1	1	—	—	—	—	—	—	—	—
Branch	273	129	144	—	273	129	144	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Calhoun	437	223	214	—	427	219	208	—	4	4	—	2	—	2	4	4	—	—	—	—	—
Cass	173	85	88	—	156	75	81	—	11	8	3	5	2	3	1	1	—	—	—	—	—
Charlevoix	75	44	31	—	73	42	31	—	—	—	—	—	—	—	2	b	2	—	—	—	—
Cheboygan	89	50	39	—	88	50	38	—	—	—	—	—	—	—	1	1	—	—	—	—	—
Chippewa	101	60	41	—	99	60	39	—	—	—	—	—	—	—	2	c	2	—	—	—	—
Clare	59	28	31	—	59	28	31	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Clinton	205	97	108	—	205	97	108	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crawford	20	9	11	—	20	9	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Delta	175	100	75	—	174	100	74	—	—	—	—	—	—	—	1	1	—	—	—	—	—
Dickinson	247	148	99	—	246	148	98	—	1	—	1	—	—	—	—	—	—	—	—	—	—
Eaton	271	138	130	3	270	137	130	3	1	1	—	—	—	—	—	—	—	—	—	—	—
Emmet	86	40	46	—	63	32	31	—	—	—	—	—	—	—	23	8	15	—	—	—	—
Genesee	424	211	213	—	420	209	211	—	—	—	—	4	2	2	—	—	—	—	—	—	—
Gladwin	29	14	15	—	29	14	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gogebic	257	142	114	1	257	142	114	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Gd. Traverse	196	104	92	—	195	103	92	—	1	1	—	—	—	—	—	—	—	—	—	—	—
Gratiot	186	91	95	—	185	90	95	—	—	—	—	1	1	—	—	—	—	—	—	—	—
Hilledale	289	143	146	—	289	143	146	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Houghton	525	284	241	—	524	283	241	—	—	—	—	—	—	—	1	d	1	—	—	—	—
Huron	300	155	142	3	300	155	142	3	—	—	—	—	—	—	—	—	—	—	—	—	—

a White and Indian.
b 1 male, white and Indian.

c 2 females, half breed.
d Half breed.

Table 48.—CONCLUDED.—Deaths by counties, sex and color.

Counties.	All colors, 1893.				White.				Black.			Mulatto.			Indian.			Unknown.		
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.
Osceola	116	61	54	1	116	61	54	1												
Oscoda	4	3	1		4	3	1													
Otsego	43	20	23		43	20	23													
Ottawa	367	197	165	5	356	190	161	5	1	1								10	6	4
Presque Isle ..	57	23	34		57	23	34													
Roscommon ..	2	1	1		2	1	1													
Saginaw	958	500	458	2	943	490	451	2	7	6	1	4	2	2	4	2	2			
Sanilac	251	124	127		251	124	127													
Schoolcraft ..	46	34	12		44	32	12								2	2				
Shiawassee ..	254	124	130		254	124	130													
St. Clair	566	295	269	2	563	292	269	2	3	3										
St. Joseph	220	124	95	1	219	124	94	1							1	1				
Tuscola	250	134	116		250	134	116													
Van Buren	307	170	137		297	164	133		5	4	1	5	2	3						
Washtenaw ..	355	213	142		339	203	136		16	10	6									
Wayne	3,834	2,086	1,741	7	3,788	2,047	1,735	6	31	26	5	6	5	1	7	7		2	1	1
Wexford	91	45	46		91	45	46													

Table 49.—Nativity of decedents in Michigan for the years 1891-93, and the average for ten years, 1883-92. (Still-births included.)

Nativity of decedents.	Deaths, 1891.		Deaths, 1892.		Deaths, 1893.		Average for ten years, 1883-92.	
	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.
All nativities	22,079	100.0	21,729	100.0	21,982	100.0	19,681	100.0
Native-born	16,287	73.7	15,633	72.2	16,187	73.6	14,794	75.2
Foreign-born	4,811	21.8	4,915	22.6	5,061	23.0	4,151	21.1
Unknown	981	4.5	1,181	5.2	734	3.4	736	3.7

Table 50.—*Exhibiting by sex, for the State and counties, the nativity of decedents returned for the year 1893. (Still-births included.)*

State and counties.	All nativities, 1893.				Native.				Foreign.			Unknown.		
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Total.	Males.	Females.
State	21,982	11,772	10,142	68	16,187	8,485	7,634	68	5,061	2,855	2,206	734	432	302
Alcona	63	30	33	—	48	23	25	—	15	7	8	—	—	—
Alger	7	4	3	—	6	4	2	—	1	—	1	—	—	—
Allegan	432	221	206	5	359	179	175	5	69	40	29	4	2	2
Alpena	228	116	111	1	151	77	73	1	68	35	33	9	4	5
Antrim	53	28	25	—	42	24	18	—	11	4	7	—	—	—
Arenac	38	21	16	1	26	17	8	1	11	4	7	1	—	1
Baraga	44	25	19	—	35	20	15	—	9	5	4	—	—	—
Barry	211	104	107	—	177	86	91	—	29	16	13	5	2	3
Bay	708	364	342	2	547	288	262	2	153	77	76	8	4	4
Benzie	65	29	36	—	45	20	25	—	16	7	9	4	2	2
Berrien	393	200	188	5	295	146	144	5	78	41	37	20	13	7
Branch	273	129	144	—	245	118	127	—	21	9	12	7	2	5
Calhoun	437	223	214	—	365	184	181	—	71	39	32	1	—	1
Cass	173	85	88	—	154	73	81	—	14	8	6	5	4	1
Charlevoix	75	44	31	—	56	32	24	—	18	11	7	1	1	—
Cheboygan	89	50	39	—	67	38	29	—	22	12	10	—	—	—
Chippewa	101	60	41	—	68	40	28	—	31	19	12	2	1	1
Clare	59	28	31	—	46	19	27	—	8	6	2	5	3	2
Clinton	205	97	108	—	171	75	96	—	34	22	12	—	—	—
Crawford	20	9	11	—	17	8	9	—	1	—	1*	2	1	1
Delta	175	100	75	—	125	66	59	—	43	30	13	7	4	3
Dickinson	247	148	99	—	181	106	75	—	63	40	23	3	2	1
Eaton	271	138	130	3	241	121	117	3	23	12	11	7	5	2
Emmet	86	40	46	—	70	32	38	—	14	8	6	2	—	2
Genesee	424	211	213	—	343	167	176	—	70	40	30	11	4	7
Gladwin	29	14	15	—	22	11	11	—	4	2	2	3	1	2
Gogebie	237	142	114	1	158	81	76	1	70	43	27	29	18	11
G'd Traverse	196	104	92	—	128	67	61	—	61	32	29	7	5	2
Gratiot	186	91	95	—	166	81	85	—	15	6	9	5	4	1
Hillsdale	289	148	146	—	249	122	127	—	28	14	14	12	7	5
Houghton	525	284	241	—	376	196	180	—	145	86	59	4	2	2
Huron	300	155	142	3	216	113	100	3	81	40	41	3	2	1
Ingham	347	172	172	3	298	145	150	3	41	22	19	8	5	3
Ionia	306	158	143	5	240	116	119	5	46	27	19	20	15	5

[illegible]

Table 50.—CONCLUDED.—Deaths by counties, sex and nativity.

Counties.	All nativities, 1893.				Native.				Foreign.			Unknown.		
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Total.	Males.	Females.
Otsego.....	43	20	23	.....	37	17	20	.....	6	3	3	.....	.....	.....
Ottawa.....	367	197	165	5	248	132	111	5	113	63	50	6	2	4
Presque Isle.....	57	23	34	.....	46	18	28	.....	11	5	6	.....	.....	.....
Roscommon.....	2	1	1	.....	2	1	1	.....	.....	.....	.....	.....	.....	.....
Saginaw.....	958	500	456	2	689	346	341	2	225	124	101	44	30	14
Sanilac.....	251	124	127	.....	151	74	77	.....	92	44	48	8	6	2
Schoolcraft.....	46	34	12	.....	25	18	7	.....	19	14	5	2	2	.....
Shiawassee.....	254	124	130	.....	195	92	103	.....	48	25	23	11	7	4
St. Clair.....	566	295	269	2	382	203	177	2	175	87	88	9	5	4
St. Joseph.....	220	124	95	1	173	98	74	1	31	19	12	16	7	9
Tuscola.....	250	134	116	.....	174	90	84	.....	66	37	29	10	7	3
Van Buren.....	307	170	137	.....	262	145	117	.....	32	18	14	13	7	6
Washtenaw.....	355	213	142	.....	267	157	110	.....	74	43	26	14	8	6
Wayne.....	3,834	2,086	1,741	7	2,548	1,393	1,148	7	1,098	583	515	188	110	78
Wexford.....	91	45	46	.....	72	36	36	.....	18	8	10	1	1	.....

TOWNSHIPS REPORTING NO DEATHS, AND DELINQUENT TOWNSHIPS.

There were 75 townships, having an aggregate population of 20,955 persons in 1894, in which no deaths occurred in 1893, according to the statements of their supervisors. The supervisors of 22 townships, representing a total population of 10,114 persons in 1894, failed entirely to make reports of deaths, as required by law. This latter statement is a decided improvement over that for the preceding year, and has been brought about largely by prompt action on the part of the State Department in calling the attention of the prosecuting attorneys of the several counties to cases of delinquency.

In this matter—the securing of full and prompt returns—the State Department has received valuable assistance from many county clerks, which is hereby gratefully acknowledged, while, on the contrary, a few county clerks, by negligent and tardy returns from their offices, and by failing to promptly notify the State Department of cases of delinquency in time for early action, have materially hindered the work of obtaining a full registration. The supervisors' returns are required by law to reach the county clerks by June 1, but are not due at this Department until September 1. Could we know of a delinquency as soon as it occurred, or as early as the county clerk should be aware of it, it would be an easy matter in many cases to call the supervisor's attention to his neglect of duty, and to secure a proper return from him. When, however, the county clerk makes no reply to the circular letter requesting a report of delinquent townships (which should be sent early in July), and when his transcript, due September 1, does not reach the State Department until several months later, it is

Table 51.—List of townships in which it was reported that no deaths occurred in 1893, showing population in 1894.

County.	Township.	Popula- tion, 1894.	County.	Township.	Popula- tion, 1894.
Alger.....	Mathias.....	212	Luce.....	Columbus.....	57
Alpena.....	Sanborn.....	345	Mackinac.....	Garfield.....	971
Antrim.....	{ Forest Home.....	801	Manistee.....	{ Brown.....	805
	{ Helena.....	691		{ Springdale.....	223
Arenac.....	{ Turner.....	31	Marquette.....	{ Sands.....	243
	{ Whitney.....	412		{ Turin.....	143
Baraga.....	Spurr.....	185	Mason.....	{ Branch.....	353
Bay.....	Mt. Forest.....	265		{ Hamlin.....	216
	{ Colfax.....	758	Midland.....	Greendale.....	167
Benzie.....	Platte.....	285	Missaukee.....	{ Norwich.....	325
	Weldon.....	661		{ Pioneer.....	202
Charlevoix.....	{ Hudson.....	128	Muskegon.....	Cedar Creek.....	388
	{ Melrose.....	505	Newaygo.....	Beaver.....	439
	{ Burt.....	461	Oceana.....	Otto.....	156
	Ellis.....	163		{ Beaver Lake.....	97
Cheboygan.....	Hebron.....	292		Cumming.....	373
	Mentor.....	379		Foster.....	186
	Waverly.....	110	Ogemaw.....	Goodar.....	172
	Wilmot.....	107		Klacking.....	380
	{ Sugar Island.....	570		Logan.....	95
Chippewa.....	Trout Lake.....	89		Mills.....	81
	White Fish.....	430	Ontonagon.....	Carp Lake.....	53
	{ Hayes.....	171		{ Atherton.....	69
Clare.....	{ Bedding.....	326	Oscoda.....	{ Big Creek.....	180
	Blaine.....	97		Mount Pindus.....	85
Crawford.....	{ Fairbanks.....	312	Otsego.....	Charlton.....	131
Delta.....	{ Sack Bay.....	208		{ Case.....	271
Dickinson.....	Breen.....	347	Presque Isle.....	{ Krakow.....	410
	{ Butman.....	205		{ Presque Isle.....	176
Gladwin.....	{ Gladwin city			{ Gerrish.....	64
	1st Ward.....	263		Markey.....	39
Isabella.....	Broomfield.....	800		Nester.....	211
Kalkaska.....	{ Cold Springs.....	123	Roscommon.....	{ Richfield.....	79
	{ Oliver.....	69		Roscommon.....	186
Keweenaw.....	Grant.....	133		St. Helena.....	297
	{ Cherry Valley.....	210	Saginaw.....	James.....	596
	Eden.....	222	Schoolcraft.....	Harrison.....	553
Lake.....	{ Lake.....	89			
	Webber.....	83			

Total population of townships reporting no deaths.....

20,955

DELINQUENT TOWNSHIPS.

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evident that by the time (1) it is ascertained by correspondence with the county clerk whether the supervisor of the missing township has made no return or reported "no deaths;" (2) the supervisor himself has been notified and requested to perform his duty; and, lastly, (3) in case of persistent refusal, the prosecuting attorney has been requested to enforce the law, that much valuable time has been wasted, and the chances of obtaining accurate returns, or even of obtaining any returns, in some cases, have greatly diminished. Such cases may often drag over into the following year, and remain unsettled at the time of the election of a new supervisor in April.

Table 52.—*List of townships from which no returns of deaths were received for 1893, showing population in 1894. (List closed December 1, 1894.)*

County.	Township.	Population, 1894.	County.	Township.	Population, 1894.
Alger.....	Munising.....	367	Kalkaska.....	Glade.....	122
Baraga.....	Covington.....	88	Maniton.....	{ N. Manitou I.*	98
	{ Beaver Creek*.....	108		{ S. Manitou I.*	79
	{ Frederic.....	253	Menominee.....	{ Holmes*.....	414
Crawford.....	{ Grove.....	95		{ Bohemia.....	172
	{ Maple Forest.....	212	Ontonagon.....	{ Interior†.....	1,623
	{ South Branch.....	108		{ Ontonagon†.....	2,491
Gladwin.....	{ Billings.....	122	Otsego.....	{ Bagley†.....	1,022
	{ Buckeye.....	254	Roscommon.....	{ Higgins†.....	716
	{ Au Sable*.....	171	Saginaw.....	{ Marion †.....	709
Iosco.....	{ Burleigh*.....	566			
	{ Wilber*.....	321			
Total population of delinquent townships.....					10,114

* No statement could be obtained from county clerk as to whether returns were made or not.

† Returns were finally received, after the attention of the prosecuting attorney had been called to the delinquency, but too late for compilation in this report.

‡ Reported to prosecuting attorneys of the several counties with request to cause reports to be made according to law, but without result. Deaths occurred in all of these townships during the year 1893, according to the State census enumeration.

The belief has been stated in previous reports that many townships among those reporting "no deaths," are so placed by the negligence of their supervisors, who find it easier to make such a return than to take the trouble to perform their duty as required by law. Such misstatements are easily revealed in the returns for 1893 (and will also be apparent in those for 1894), by comparing the deaths reported by the supervisors with the deaths reported from the same townships for that part of the year covered by the State census of 1894. The census enumerators collected the deaths that had occurred during the year extending from June, 1893, to May, 1894, inclusive. Thus seven months of the registration year 1893 may be checked by examination of the census returns. It is interesting to make comparisons for some of the larger townships whose supervisors reported to this Department that no deaths had occurred during 1893.

VITAL STATISTICS OF MICHIGAN, 1893.

Statement of deaths reported by census enumerators for seven months, June-December, 1893, from certain townships whose supervisors reported that no deaths had occurred during the calendar year 1893.

County.	Township.	Population, 1894.	Deaths, June-December, 1893.
Alpena	Sanborn	245	1
Antrim	Helena	691	1
Bay	Mt. Forest	265	2
Benzie	{ Colfax	758	4
	{ Platte	285	1
	{ Weldon	661	11
Charlevoix	{ Hudson	128	1
	{ Melrose	505	1
Cheboygan	{ Burt	461	1
	{ Mentor	379	1
	{ Waverly	110	1
Chippewa	Sugar Island	570	7
Clare	Redding	326	1
Crawford	Blaine	97	1
Gladwin	Gladwin, 1st ward ..	263	2
Isabella	Broomfield	800	2
Manistee	{ Brown	805	2
	{ Springdale	223	2
Marquette	{ Sands	248	1
	{ Turin	143	1
Missaukee	Norwich	325	1
Ogemaw	{ Beaver Lake	97	1
	{ Cumming	378	1
Presque Isle	Presque Isle	176	1
Total		9,034	48

It thus appears that in 24 townships out of the 75 that reported no deaths, deaths actually occurred during the portion of the year covered by the census. The aggregate population of these 24 townships was 9,034 persons in 1894, and the average death-rate, increasing the 48 deaths enumerated to the proportional number for the year at the same rate, would be 9.1 per 1,000, or only less by .9 per 1,000 than the death-rate for the entire State in 1893, as returned.

As shown in the above statement no less than eleven (11) deaths were reported by the census enumerator to have occurred in Weldon township during only a portion of the year 1893, viz., the seven months from June to December, inclusive. This number corresponds to an annual death-rate of 25.7 per 1,000, a rate very high for a township in Michigan in which no epidemic prevailed. The census enumeration of deaths is not generally very accurate (for the same reasons that cause the annual

enumeration of deaths by the supervisors to be imperfect), but in this case there was apparently a very full registration.

Higgins township, Roscommon county, is included in the list of townships, from which no returns could be obtained in time for compilation in the present report. Returns were, however, finally received (Dec. 29, 1894) consisting of eight births and seven deaths, the latter all caused by diphtheria. As Roscommon is a small county, the addition of these delayed returns would materially affect the birth-rate and death-rate as computed for the year.

PROCESS OF OBTAINING DELINQUENT RETURNS.

It may be of interest, as showing the difficulty of correcting imperfect reports under the present system of registration, to present an account of the efforts that were made by the State Department to obtain correct returns in a typical instance.

Proper blanks for the enumeration of births and deaths were prepared and shipped to the county clerks throughout the State on or near March 20, 1894. The number sent to each county was based upon an estimate previously obtained from each county clerk of the number necessary for distribution, such estimate being carefully checked in this Department and compared with the numbers supplied for previous years, population, number of births and deaths returned, number of supervisors, and number of blanks on hand in county clerk's office, so that an ample supply of blanks for all necessary requirements could be sent without waste. A receipt for the blanks is required from each county clerk, upon which may be noted any failure to send an adequate supply. With the blanks are sent full instructions * to the county clerks and supervisors for making returns, information to the supervisors as to duties under the law, and, in general, every suggestion that seems likely to facilitate the work of enumeration and cause full and reliable returns to be made. Every supervisor is especially requested to make his returns to the county clerk at the time prescribed by law (on or before June 1) *whether any births or deaths have occurred in his township or not*, in order that it may be known that the enumeration has been duly made in the latter case.

In order that returns might be made as expeditiously as possible, and thus the work of compilation be forwarded, a special circular was sent to each county clerk:

MICHIGAN,
DEPARTMENT OF STATE,
Lansing, July 2, 1894.

To County Clerks:

Returns have already been received from several counties of the births and deaths that occurred during 1893. It is very desirable that these returns be made at as early a date as possible, in order to facilitate the work of compilation. The law provides that they be sent in "on or before the first day of September," but it is perfectly practicable in many cases to send them in within thirty days after the supervisors have made their returns, that is, by the early part of July.

Under the law all returns from supervisors are required to be made by June 1. This matter should be carefully attended to, and the law enforced in case of any necessary delay. *Have all the supervisors in your county made their returns to you of both births and deaths?* If not, you should notify them of the necessity of so doing, and if no attention is paid to the request within a reasonable time, inform this Department by letter, stating each delinquent supervisor's name, township, postoffice address, and whether he has failed to make proper returns of births, deaths, or both births and deaths.

Very respectfully,

WASHINGTON GARDNER,
Secretary of State.

* See Appendix, Report for 1892.

As soon as statements were received from county clerks that any supervisors had failed to report the births and deaths that had occurred in their respective townships as required by law, personal letters were sent to the supervisors who had failed to report urging them to do so. When, as occurred in some instances, no replies were received to such requests, and the county clerks reported that the returns had not been made in compliance therewith, notices of the delinquencies were sent to the prosecuting attorneys, and their assistance enlisted to secure the delinquent returns,—if necessary, by prosecution under section 866, Howell's statutes. In most cases the supervisors hastened to comply with the law when their attention was called to the penalty attached to their neglect of duty.

The following extract from the letter of an experienced county clerk will be of interest as calling attention to a proposed method for improving the efficiency of the present law. While no great degree of perfection in the collection of births and deaths will ever be attained under the present system, which requires an annual enumeration instead of the immediate registration that has been fully demonstrated to be the essential of accurate vital statistics, there is no question but that the suggestion of Mr. Nevius would, if adopted, result in greatly improved accuracy under the present system:

"I would volunteer to say that in my experience as clerk for the last ten years in furnishing testimony of births and deaths in pension and other matters, that it has been a very common thing to find no record of a birth, and in a few instances I have failed to find the record of a death. I think there is great need of a more stringent law. If the supervisors' report of births and deaths could be reviewed by the township board, many names might be added that are omitted, and he should be required to make a sworn statement before receiving his compensation from the county. I think with a little more stringency in the law that we would get more accurate reports, and save the Secretary of State, as well as the county clerk, a good deal of annoyance."—*Letter of L. N. Nevius, Esq., clerk of Benzie county, October 3, 1894.*

The above particulars in regard to the process of obtaining delinquent returns have been given somewhat fully, on account of the importance of the subject. While an unpleasant duty, nevertheless the prosecution of such cases until satisfactory or apparently satisfactory results are obtained is one that cannot be neglected by the central office, except at the risk of greatly increasing the proportion of defective returns. It is true that it cannot always be known by this Department whether a correct enumeration has finally been taken or not in response to the solicitations of the Department. In too many cases the final report is only perfunctory, and has not been based upon a careful enumeration as contemplated by the law. Very little can be done in such cases where the forms of the law, including the making of the certified report, have been duly complied with. Many townships of large population yearly report an absurdly small number of births and deaths, but the fact that some have been reported and that the enumeration has evidently been made precludes further inquiry. No complete and accurate records of births and deaths will ever be obtained until provision is made for their immediate registration soon after the time of occurrence; in the meantime, while charged with the execution of the old and imperfect registration law, every effort should be made to enforce it as thoroughly as possible, remembering that the record of even a single birth or death, while of little statistical weight, may be of the greatest personal interest and legal importance to some inhabitant of the State whose interest in this respect the State assumed the guardianship of when the registration law was established.

SECTION II.—CAUSES OF DEATH IN MICHIGAN DURING THE YEAR 1893.

The tables in this section of the report are designed to exhibit the particulars in regard to the mortality in Michigan for the year 1893 with especial reference to the individual causes of death, so far as the returns afford information on this point. It is well ascertained that not all of the deaths that annually occur in Michigan are enumerated by the supervisors. It has been estimated that should the number of deaths actually returned be increased by 60 per cent of itself, the result would probably not exceed the actual number of deaths that occurred. This percentage of omissions is known to be somewhat irregularly distributed through the year, the early months most distant from the date of enumeration being the most deficient. It is evident that the individual causes of death share in this deficiency of enumeration, and, on the average, each should be increased by about the same percentage as total deaths in order to give the entire number of deaths. Certain diseases, as cholera infantum, whose incidence is mostly in the latter months of the year, are more fully returned than others, like measles or scarlet fever, which occur chiefly in the spring.

The original statements of the causes of death are made by the supervisors or assessors on the authority of the families or friends of the deceased persons, and are not based, as a rule, upon the death-certificates of the medical attendants. A very large percentage of deaths is returned with the cause of death entirely unspecified or stated to be "unknown," while many of the specified causes included in the tables are so indefinite as to afford no accurate information in regard to the diseases that caused death. Such are the deaths returned as due to "lung trouble," "brain difficulty," "kidney complaint," "heart failure" (no less than 353 of these in 1893, few of which were probably actual heart disease), "convulsions," "dropsy" of various organs, "fever" (unspecified as to its nature), "old age," "debility," etc., etc. The best that can be done with such statements is to classify such of them as admit of it under the organ affected, and to remember that the deaths reported from definitely specified causes would be increased somewhat if the nature of the diseases included in these indefinite returns could be ascertained.

The present system of enumeration of deaths in Michigan not only fails to obtain a large percentage of the deaths that actually occur, and to state definitely the causes of death in the cases of a large number of those decedents that are returned, but even the definite statements made by the enumerators are open to more or less question. They have no medical knowledge, as a class, and are not able to intelligently scrutinize the statements made to them by interested parties,—the families or friends of decedents. In many cases the facts required are not definitely remembered by the family; the physician's diagnosis is misunderstood or forgotten, and a worthless or misleading statement is made. The remedy for these defects in the present registration law is a very simple one, and one that is already in practical operation in many cities of the State under local regulations,* namely, the requirement of a certificate of death from the medical attendant and the issue of a permit for burial or for the removal of the body in the case of every death that occurs in this State, city and country alike. Without such permit from the township, village or city authority empowered to issue the same, no burial or removal for burial in another State should be permitted under strict penalties.

* See Part V, Report for 1892.

The most important causes of death from a practical standpoint are those that the State Board of Health is endeavoring to restrict,—the “*communicable diseases dangerous to the public health*” as defined by law. Especial prominence is given to these in the tables in this section of the report, and in the following summary the number and percentage to total deaths from all specified diseases are stated for the leading ones:—

SUMMARY OF REGISTRATION OF CAUSES OF DEATH, 1893.*

Deaths from all causes,	21,982
Death-rate per 100,000 estimated population,	997.1
(Actual number of deaths from all causes, estimated at,)	35,171
Actual death-rate, all causes, per 100,000 population estimated at,	1,595.4

In the above statement of deaths from all causes, still-births are included to the number of 1,019. Excluding these, as is customary in most mortality reports, we have:—

Deaths from all causes, still-births excluded,	20,963
Death-rate per 100,000, still-births excluded,	950.9

Excluding 1,175 deaths from violence (accidental, 1,050; suicidal, 109; homicidal, 16; see Tables 62-65 for full particulars in regard to this class); 1,019 still-births (see Table 18, Part II); 97 premature births; and 1,780 deaths of which the causes were unknown or unspecified, we have:—

Deaths from specified diseases,	17,911
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Even this number contains many deaths the causes of which are practically unspecified, as “old age,” “debility,” etc., but such deaths can be certainly ascribed to disease. The total thus obtained makes a more satisfactory basis of reference for stating the proportion of deaths from any specified cause than the grand total inclusive of deaths from violence, still-births, and “unknown” causes. Thus we have:—

Deaths from communicable diseases dangerous

to the public health,	5,053 or 28.2 per cent.
---------------------------------	-------------------------

This number includes only those at present so defined by the State Board of Health. It will probably eventually include all specific infectious diseases. The principal diseases now included are:—

Consumption,	2,154 or 12.0 per cent.
Diphtheria and croup,	1,218 “ 6.8 “ “
Typhoid fever,	689 “ 3.8 “ “
Scarlet fever,	360 “ 2.0 “ “
Whooping-cough,	172 “ 1.0 “ “
Measles,	127 “ .7 “ “

Certain other diseases and groups of diseases of special importance are:—

Cancer,	644 or 3.6 per cent.
Influenza,	555 “ 3.1 “ “
Pneumonia,	1,385 “ 7.7 “ “
Lung diseases (including pneumonia and consumption),	4,020 “ 22.4 “ “
Bowel diseases,	2,035 “ 11.4 “ “
Brain diseases,	1,709 “ 9.5 “ “
Heart diseases (not including “heart failure,”)	1,076 “ 6.0 “ “

* See summary of registration of deaths (occurrence by months, sex, age, color and nativity of decedents) on p. 92.

The following tables are arranged to show as clearly as possible the facts concerning the causes of death *as returned*; it is impracticable to attempt to apply any graduated correction in order to bring out more clearly the relations of the mortality from various diseases to meteorological conditions in the several months, or to attempt to estimate the actual number of deaths from different diseases, the factor of correction being variable, as already stated, owing to the different distribution of different diseases through the year. All subsequent statements must be taken with some allowance, it being understood that they are true only so far as our present returns may be depended upon.

In Table 53 the relative number of deaths of each sex from the diseases included may be considered as approximately correct upon the hypothesis that the deaths returned are fairly representative of the whole number that occurred. So, also, the distribution of the deaths from each cause by periods of age of decedents, as given in this table, is probably reliable. The distribution of deaths by months is not reliable, the early months of the year being not so completely returned as the latter months. In Table 54 the relative number of deaths from each disease to total deaths from disease in each county may be accepted, with some reservations on account of more careful definition of causes of death in certain localities.

Synopsis of tables relating to causes of death.

Table.	Causes of death in Michigan, 1893.
<i>A.—Diseases returned as causes of death, 1893.</i>	
53.	Important diseases returned as causes of death in Michigan during the year 1893, by sex, months of death and periods of age.
54.	Important diseases returned as causes of death in Michigan during the year 1893, by counties.
55.	Important diseases returned as causes of death in Michigan for each of the years 1869-93, inclusive.
56.	Death-rates from certain important infectious diseases, 1869-93. With Diagram.
57.	Geographical divisions of the State used in the study of the distribution of causes of death.
58.	Deaths from "old age" and deaths of persons aged under 5 years and over 70 years, by geographical divisions, 1893.
59.	Certain important diseases returned as causes of death in 1893, by geographical divisions:—Consumption, pneumonia, influenza, diphtheria, croup, scarlet fever, typhoid fever and diarrheal diseases.
60.	Comparison of deaths returned from typhoid fever in Michigan, by counties, for six years, 1888-93; with death-rates for the five-year period, 1888-92, and for the year 1893. Accompanied by Map.
61.	Deaths from cancer returned for the year 1893 and for the twenty-one years, 1872-92, specifying sex and organs affected. With note on deaths from "tumor," 1893.
<i>B.—Deaths from violence, 1893.</i>	
62.	Deaths from violence in Michigan during the year 1893, classified.
63.	Deaths from violence in Michigan in 1893, by counties.
64.	Deaths from suicide in Michigan, 1874-93, showing months of death, sex and civil condition of decedents.
65.	Deaths from suicide in Michigan, 1874-93, showing (a) occupations; (b) nativities; and (c) means of death used.
66.	Causes of death in Michigan, 1888-93:— <i>Alphabetical List</i> of causes of death as returned, showing months of death and periods of age of decedents, by sex, for 1893, and total deaths from each cause, by sex, for the years 1888-92.

Table 53.—Important diseases and groups of diseases returned as causes of death in decedents from

Line number.	Causes of death, 1893.	Total deaths, 1893.	Sex.			Months of death, 1893.												
			Males.	Females.	Unknown.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
1	TOTAL DEATHS.....	21,982	11,772	10,142	68	1,413	1,454	1,789	1,668	1,744	1,616	1,695	2,042	2,166	1,909	1,818	2,605	68
2	SPECIFIED DISEASES.	17,911	9,231	8,669	11	1,159	1,198	1,477	1,388	1,403	1,276	1,350	1,672	1,767	1,567	1,489	2,182	89
3	<i>Dangerous Commu- nicable Diseases</i>	5,053	2,436	2,616	1	352	360	446	405	422	374	386	408	452	472	448	520	8
4	Consumption.....	2,154	999	1,155	--	151	149	188	189	189	175	159	168	192	198	163	229	4
5	<i>Other tubercular diseases</i>	196	118	78	--	16	12	24	18	20	18	13	14	14	18	14	15	--
6	Marasmus.....	89	50	39	--	7	7	18	6	8	12	9	7	5	8	3	4	--
7	Meningitis, Tuberc. .	38	21	17	--	4	1	5	1	3	3	2	2	3	5	3	6	--
8	Scrofula.....	21	16	5	--	2	1	4	1	2	1	1	1	3	2	2	1	--
9	Tabes mesenterica.....	27	15	12	--	2	--	1	7	4	1	1	3	3	--	4	1	--
10	<i>Other forms of tu- berculosis</i>	21	16	5	--	1	3	1	3	3	1	--	1	--	3	2	3	--
11	Croup.....	217	111	106	--	22	23	21	15	14	9	6	10	19	17	25	35	1
12	Croup, Membranous.....	42	22	20	--	2	7	1	4	1	2	--	2	3	6	6	8	--
13	Diphtheria.....	959	452	507	--	68	76	85	55	79	84	91	78	74	82	92	94	1
14	Erysipelas.....	57	37	20	--	4	4	9	7	5	4	3	3	2	3	9	4	--
15	Fever, Puerperal.....	42	--	42	--	3	4	4	6	4	2	2	2	3	1	2	9	--
16	Fever, Scarlet.....	360	161	199	--	31	31	49	37	40	26	27	24	22	18	22	33	--
17	Fever, Typhoid.....	689	392	297	--	35	30	34	37	24	34	51	74	88	113	97	70	2
18	Fever, Typho-malarial	28	14	14	--	2	--	2	--	--	1	2	2	7	6	1	5	--
19	Fever, Typhus.....	4	3	1	--	--	--	--	--	--	--	1	1	--	--	2	--	--
20	Glanders.....	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21	Measles.....	127	50	77	--	7	13	14	16	27	10	11	9	7	4	5	4	--
22	—German (Rötheln). .	1	--	1	--	--	--	1	--	--	--	--	--	--	--	--	--	--
23	Small-pox.....	3	1	2	--	2	1	--	--	--	--	--	--	--	--	--	--	--
24	Chicken-pox.....	2	1	1	--	--	--	--	--	--	--	--	--	1	--	1	--	--
25	Whooping-cough.....	172	75	96	1	9	10	14	21	19	9	20	21	20	6	9	14	--
26	Bladder diseases.....	41	35	6	--	2	5	2	5	5	7	3	--	2	7	3	6	--
27	Calculus.....	10	7	3	--	1	--	1	2	--	--	1	--	--	3	2	--	--
28	Cystitis.....	25	23	2	--	--	4	1	3	3	1	2	--	2	4	1	4	--
29	Bladder disease, etc.....	6	5	1	--	1	1	--	--	2	--	--	--	--	--	--	2	--
30	Bowel diseases.....	2,035	1,114	917	4	55	57	84	73	62	89	235	469	460	236	110	104	1
31	Bowels, Inflam'tion of	438	238	195	--	20	20	36	38	20	26	32	57	55	46	40	47	1
32	Diarrhea.....	371	190	181	--	8	4	11	7	8	20	63	122	69	30	16	13	--
33	Cholera infantum.....	833	484	345	4	9	17	11	15	9	24	104	228	246	120	26	24	--
34	Dysentery.....	79	40	39	--	1	--	1	1	3	2	8	12	36	12	1	2	--
35	Peritonitis.....	83	36	47	--	8	6	12	7	5	1	6	11	9	5	8	5	--
36	Bowel disease, etc.....	236	126	110	--	9	10	13	10	17	16	22	39	45	23	19	13	--

NOTE.—The arrangement of causes of death is uniform in Tables 53, 54 and 55. For explanation of the terms used, their inclusion and relation to the classifications formerly employed in these reports, see text beginning on page 164, to which reference may be made by line numbers.

CAUSES OF DEATH, BY SEX, MONTHS, AND PERIODS OF AGE. 145

Michigan during the year 1893, showing sex, months of death and periods of age of each cause.

Ages of decedents, by five-year periods, 1898.																	Line number.
Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	
7,452	919	562	784	1,004	885	822	775	658	711	775	846	876	1,075	1,205	1,018	1,348	317 1
5,102	828	476	667	846	692	696	668	568	630	690	767	815	984	1,068	951	1,248	194 2
1,396	565	273	367	480	389	318	288	183	153	125	121	108	98	93	52	41	53 3
119	24	53	198	320	272	210	173	143	118	102	96	79	78	78	40	26	25 4
126	6	-----	12	12	2	9	3	1	7	4	1	3	2	2	3	-----	3 5
85	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	2 6
30	4	-----	1	1	-----	1	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	7
10	1	-----	3	1	-----	2	1	-----	-----	1	-----	-----	-----	-----	2	-----	8
-----	-----	-----	3	6	1	1	2	1	4	3	-----	1	1	2	1	-----	1 9
1	1	-----	5	4	-----	5	-----	-----	2	-----	1	2	-----	-----	-----	-----	10
189	23	1	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	1 11
25	11	2	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2 12
370	334	149	54	13	15	7	5	1	2	3	1	-----	-----	-----	-----	1	4 13
14	1	1	2	-----	1	1	2	2	2	2	4	6	3	4	5	7	14
-----	-----	-----	4	12	10	9	3	2	-----	-----	-----	-----	-----	-----	-----	-----	2 15
216	105	26	4	5	-----	1	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	2 16
72	42	38	80	109	83	75	47	30	22	13	18	18	14	9	4	7	13 17
1	1	5	3	4	3	5	2	1	1	1	1	-----	-----	-----	-----	-----	18
-----	-----	-----	4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	19
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
95	12	1	3	4	3	1	3	3	1	-----	-----	1	-----	-----	-----	-----	21
1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	22
1	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	23
2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	24
165	5	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1 25
1	1	-----	-----	1	-----	2	-----	1	2	2	2	4	6	7	9	3	26
-----	1	-----	-----	-----	-----	-----	-----	-----	2	1	-----	2	1	1	1	1	27
1	-----	-----	-----	1	-----	1	-----	1	-----	1	2	1	4	4	7	2	28
-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	1	1	2	1	-----	29
1,438	43	39	41	45	35	43	31	35	30	37	27	31	44	29	41	32	14 30
174	20	24	31	27	16	24	14	16	12	15	10	12	12	8	12	5	1 31
313	7	2	-----	2	1	1	2	3	2	3	2	2	6	8	3	11	3 32
815	9	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	8 33
40	1	1	-----	-----	1	-----	1	1	2	3	2	5	4	4	6	8	34
6	2	8	5	9	9	8	6	5	3	5	3	2	4	2	3	2	1 35
90	4	4	5	7	8	10	8	10	11	11	9	10	18	7	17	6	1 36

Table 53.—CONCLUDED.—Important diseases returned as causes of

Line number.	Causes of death, 1893.	Total deaths, 1893.	Sex.			Months of death, 1893.												
			Males.	Females.	Unk.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
37	Brain diseases	1,709	929	780	--	122	106	128	118	140	145	130	150	175	151	145	194	5
38	Apoplexy	240	137	103	--	20	12	25	25	17	22	19	16	11	31	20	21	1
39	Brain, Congestion of	79	42	37	--	5	6	5	4	6	12	7	8	5	9	3	8	1
40	Brain, Inflammation of	307	151	156	--	16	23	24	25	23	21	25	37	39	25	25	24	--
41	Epilepsy	66	39	27	--	4	6	6	2	5	9	4	5	4	7	6	7	1
42	Meningitis	172	90	82	--	17	11	13	19	13	10	12	13	22	12	8	22	--
43	Paralysis	662	356	306	--	43	38	41	34	61	57	55	61	65	54	63	88	2
44	Brain disease, etc.	183	114	69	--	17	10	14	9	15	14	8	10	29	13	20	24	--
45	{ Cancer	644	284	360	--	38	44	42	55	55	56	54	56	71	48	49	78	3
46	{ Tumor	156	43	113	--	7	11	14	7	14	18	12	15	16	16	15	10	1
47	Childbirth	222	-----	222	--	14	22	36	27	26	19	13	13	12	13	14	11	2
48	Convulsions	520	283	236	1	31	30	49	52	39	28	48	47	50	49	43	52	2
49	Diabetes	111	67	44	--	4	7	15	13	9	6	6	2	11	10	15	13	--
50	Dropsy	446	198	248	--	24	42	26	28	40	39	37	40	36	41	48	45	--
51	Fever	100	48	52	--	5	11	6	6	7	5	2	10	9	13	14	10	2
52	Fever, Malarial	122	65	57	--	7	9	9	12	17	4	9	8	13	11	7	16	--
53	Heart diseases	1,429	785	644	--	82	93	119	125	118	125	108	110	108	121	138	178	4
54	Pericarditis	80	38	42	--	3	4	7	5	5	9	11	6	6	9	6	9	--
55	Heart disease, etc.	996	556	440	--	57	60	85	85	82	89	77	81	78	76	100	122	4
56	"Heart failure"	353	191	162	--	22	29	27	35	31	27	20	23	24	36	32	47	--
57	Influenza	555	280	275	--	43	41	28	26	33	20	14	15	20	24	39	252	--
58	Kidney diseases	479	345	134	--	26	24	52	34	42	42	48	37	34	47	42	50	1
59	Kidneys, Inflammat'n of	375	257	118	--	18	19	43	27	34	34	38	32	26	35	33	35	1
60	Kidney disease, etc.	104	88	16	--	8	5	9	7	8	8	10	5	8	12	9	15	--
61	Liver disease, etc.	166	87	79	--	9	8	9	13	20	19	16	18	11	16	12	15	--
62	Lung diseases	1,866	1,019	846	1	169	158	212	164	173	110	62	95	91	105	164	360	3
63	Asthma	79	45	34	--	8	5	7	7	4	6	4	9	6	5	6	12	--
64	Bronchitis	182	97	85	--	15	14	20	14	20	15	3	8	13	15	18	27	--
65	Pleurisy	28	21	7	--	2	1	1	4	2	--	1	3	2	4	2	6	--
66	Pneumonia	1,385	745	639	1	137	116	163	120	129	71	50	55	62	68	125	286	3
67	Lungs, Congestion of	77	42	35	--	3	9	13	6	8	6	1	3	1	6	5	16	--
68	Lung disease, etc.	115	69	46	--	4	13	8	13	10	12	3	17	7	7	8	13	--
69	Rheumatism	141	88	58	--	12	15	15	14	9	14	14	8	6	9	7	18	--
70	Septicæmia	177	106	71	--	15	9	26	20	11	15	11	9	12	16	17	14	2
71	Spine disease, etc.	105	48	57	--	9	12	9	8	6	10	8	5	7	11	11	9	--
72	Stomach diseases	233	134	99	--	11	16	15	15	18	23	13	21	32	24	15	27	3
73	Stomach, Inflammat'n of	64	38	26	--	3	5	3	6	8	6	2	5	9	5	4	8	--
74	Stomach disease, etc.	169	96	73	--	8	11	12	9	10	17	11	16	23	19	11	19	3
75	Syphilis	21	13	8	--	4	3	1	1	1	2	2	1	-----	4	-----	2	--
76	Unclassified	1,580	829	747	4	112	115	134	117	136	111	119	136	139	123	133	203	2

CAUSES OF DEATH, BY SEX, MONTHS, AND PERIODS OF AGE. 147

death in Michigan, 1893, by sex, months of death and periods of age.

Ages of decedents, by five-year periods, 1893.

Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.	Unk.	Line number.
391	65	35	28	28	19	39	46	47	80	64	96	114	151	186	129	148	23	37
3	1	1	2	4	1	5	5	8	12	20	24	31	38	36	18	31	2	38
41	4	3	4	2	2	3	2	3	2	3	2	1	1	2	2	1	1	39
205	27	18	9	7	1	7	3	7	3	3	4	1	7	3	1	1	40	
8	2	2	2	4	5	5	9	3	6	4	4	4	4	4	4	4	1	41
108	21	8	9	3	2	3		3	4	3				1	3	1	3	42
9	5	2	5	7	7	6	14	16	36	35	47	67	85	117	91	105	15	43
22	5	1	2	3	1	10	13	7	17	16	15	10	18	23	10	9	1	44
6	1		6	10	6	15	39	46	55	69	76	75	95	61	38	39	7	45
6	1	4	2	4	7	8	12	14	17	21	16	10	14	11	5	3	1	46
			20	43	44	43	46	17	5				1				3	47
464	12	4	6	6	4	3	3	1	2	3	1		2			2	7	48
1	5	9	7	5	4	1	4	3	7	10	13	10	4	12	11	3	2	49
25	7	8	10	6	10	10	15	13	33	24	37	40	46	52	55	51	4	50
48	3	5	3	7	5	8	2	2	1	3	1	2	2	1	2	5	5	51
27	5	3	11	11	6	4	6	5	1	8	3	9	5	6	4	6	2	52
88	20	18	20	38	30	38	59	55	72	104	127	130	183	184	128	111	24	53
2	1		2	3	2		4	4	4	4	5	5	14	10	13	7	5	54
62	12	16	17	28	20	30	45	38	59	77	91	88	121	121	85	68	18	55
24	7	2	1	7	8	8	10	13	9	23	31	37	48	53	30	36	6	56
77	8	4	14	14	18	14	11	11	12	10	29	44	40	63	86	96	4	57
13	7	7	11	15	15	30	21	16	37	30	38	39	46	62	48	38	6	58
6	5	6	10	13	12	24	19	12	35	26	33	32	34	49	32	21	6	59
7	2	1	1	2	3	6	2	4	2	4	5	7	12	13	16	17	6	60
17	1	1		3	4	6	7	12	12	14	13	26	17	15	7	9	2	61
579	49	36	64	66	46	58	74	58	53	83	112	100	122	150	91	111	14	62
1	1							1	3	6	9	9	15	19	9	5	1	63
97	3	1	1	3	3	2		1	4	4	10	8	13	12	10	9	1	64
2	1	1	1	2	3	1	1	1	1	4	4	2	1	2		1	65	
408	40	32	53	50	39	47	66	50	40	61	76	77	81	107	63	85	10	66
38	2	1	3	2		2	2	1	1	5	2	1	3	1	6	7	67	
33	2	1	6	9	1	6	5	4	4	3	11	3	9	9	3	4	2	68
6	6	7	11	6	5	8	4	8	6	11	7	12	15	10	11	13	69	
24	2	4	12	16	14	12	14	9	12	4	6	8	11	14	7	5	3	70
54	8	3	8	5	3		3	2	3	5	3	2	2	2	1	1	71	
70	2	1	3	10	12	7	3	4	12	14	13	19	17	21	14	9	3	72
16	1		2	2	7	3	2	1	2	8	2	5	3	4	4	1	1	73
54	1	1	1	8	5	4	1	3	10	6	11	13	14	17	10	8	2	74
9	3			1	1		1	2					2	1	1		75	
362	14	15	23	26	15	29	27	27	25	29	26	33	61	118	211	517	22	76

Table 54.—Important diseases and groups of diseases returned as causes of

Line number.	Causes of death, 1893.	State.	Counties—Alcona													
			Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Baraga.	Barry.	Bay.	Benzie.	Berrien.	Branch.	Calhoun.	Cass.
1	TOTAL DEATHS	21,982	63	7	432	228	53	38	44	211	708	55	393	273	437	173
2	SPECIFIED DISEASES.....	17,911	53	5	355	175	42	31	31	189	611	47	320	243	394	148
3	<i>Dangerous Communi- cable Diseases</i>	5,053	35	1	88	48	8	11	9	38	277	18	81	72	68	23
4	Consumption.....	2,154	7	..	52	11	3	7	5	14	51	8	46	28	37	16
5	<i>Other tubercular dis- cases</i>	196	..	..	2	1	..	..	..	1	3	..	3	3	6	1
6	Marasmus	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	Meningitis, Tuberc.	38	..	..	1	..	..	..	..	..	..	..	2	2	3	..
8	Serofula	21	..	..	..	..	..	..	..	..	..	..	1	1	3	..
9	Tabes mesenterica.....	27	..	..	..	..	..	..	..	..	3	..	..	..	..	..
10	Other forms of tuber- culosis	21	..	..	1	1	..	..	..	1	..	..	..	..	..	1
11	Croup	217	..	..	2	4	..	..	..	..	28	..	2	..	2	..
12	Croup, Membranous.....	42	1	..	2	2	..	1	..	1	5	..	..	..	..	..
13	Diphtheria	959	28	..	11	16	1	1	..	11	154	..	7	9	3	4
14	Erysipelas	57	..	..	2	..	..	..	..	..	2	..	..	1	1	..
15	Fever, Puerperal	42	..	..	2	..	..	1	..	1	..	1	..	1	2	..
16	Fever, Scarlet	360	..	1	2	5	..	..	..	2	14	5	1	6	3	3
17	Fever, Typhoid.....	689	..	..	8	5	2	1	3	5	17	1	17	12	10	2
18	Fever, Typho-malarial...	28	..	..	..	..	..	..	..	..	..	..	1	1	..	..
19	Fever, Typhus	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	Glanders .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	Measles	127	..	..	4	..	2	..	1	..	3	2	4	11	3	2
22	—German, (Rötheln)....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	Small-pox	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Chicken-pox	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..
25	Whooping-cough	172	..	..	1	4	..	..	..	3	..	1	..	..	1	2
26	Bladder diseases.....	41	..	..	..	..	1	..	..	..	..	..	..	1	2	..
27	Calculus	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	Cystitis	25	..	..	..	..	1	..	..	..	..	..	..	1	1	..
29	Bladder disease, etc.....	6	..	..	..	..	..	..	..	..	..	..	..	..	1	..
30	Bowel diseases.....	2,035	4	2	26	23	4	3	5	11	71	4	33	14	40	18
31	Bowels, Inflammation of..	433	1	2	4	4	..	..	..	..	18	3	7	6	4	5
32	Diarrhea	371	..	..	3	6	1	..	..	2	17	1	..	1	3	1
33	Cholera infantum	833	3	..	13	5	3	3	5	4	80	..	16	5	19	9
34	Dysentery	79	..	..	1	1	..	..	..	1	1	..	..	6	..	2
35	Peritonitis.....	83	..	..	1	..	..	..	..	..	1	..	2	1	1	..
36	Bowel disease, etc.....	236	..	..	4	7	..	..	..	4	4	..	8	1	7	3

death in Michigan during the year 1893, showing their distribution by counties.

to Keweenaw.																										Line number.
Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Grand Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.	Keweenaw.	
101	59	205	20	175	247	271	86	424	29	257	196	188	289	525	800	847	306	120	51	138	537	459	44	1,244	30	1
57	42	188	17	109	173	242	48	372	13	189	160	149	264	881	234	294	257	100	38	102	446	401	33	1,035	24	2
21	8	43	9	25	61	60	14	94	2	131	56	31	45	117	96	78	77	27	12	24	96	77	11	273	5	3
10	1	28	2	9	17	33	6	47	2	13	28	20	25	41	29	82	52	11	5	17	64	48	5	108	2	4
		2	1		1	1	2	2			2		2	6	2	2				7	2	3		12	2	5
														1										2	2	6
		1	1		1		1							4		1					1		3		7	
		1					1															1		3		8
						1					2		2		2					1	1	1		4		9
														1								1				10
1				2	9	2		2						5	1		2	5	6	2	2	1		8		11
		1		1		1				1	1			2	1	2			1			1		4		12
6		5	6	1	14	2		26		10	5	2	9	4	51	13	6	8			7	4	4	47		13
						1		4					1	1	1							4	1	2		14
		1		1	1	2		1			1	1			1	2	1	1			3			1		15
2	2	1			4	1		2		23	2	1		28	1	8	2	1			5	2		9		16
	2	5		5	7	11	5	2		82	10	6	4	13	5	11	11	1		4	9	9	1	62	1	17
								1						2		2		1			2			1		18
																1										19
																										20
2				5	3	1				2	1		1								1			7		21
													1													22
																										23
																										24
	2	1		1	5	6		7			6			12	2	7	2				1	5		12		25
		1				2		3					1		1	1	1				1	2		2		26
						1		1							1							1				27
		1				1		2					1								1	1		2		28
																1	1									29
2	12	16		34	52	16	3	51	1	14	14	17	21	78	18	25	15	13	4	8	44	57	2	121	11	30
1	3	7		5	4	5	1	5			3	2	3	21	4	3	5	6	2		9	7	1	27	8	31
		2		13				2		4			1	32	3	1	2	1		1	3	4		29	2	32
1	7	5		11	46	6		19	1	6	2	11	10	14	5	13	6	4	1	6	24	24		39	1	33
		1		1		1		1			3		2	3	2	1	1	2	1	1	1	4		4		34
				4	1	3	2	1					2	1		5					5	9		10		35
1	1				1	1		3		4	6	2	4	7	4	2	4				2	9	1	12		36

Table 54.—CONTINUED.—Important diseases returned as

Line number.	Causes of death, 1893.	Counties—Alcona													
		State.	Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Baraga.	Barry.	Bay.	Benzie.	Berrien.	Branch.	Calhoun.
37	Brain diseases.....	1,709	2	1	43	12	4	3	5	32	41	3	26	35	39
38	Apoplexy.....	240			2		1		2	3	7		3	2	7
39	Brain, Congestion of.....	79			2		1			1	3		1	4	1
40	Brain, Inflammation of.....	307	1	1	4	5	1		2	4	17	1	2	1	2
41	Epilepsy.....	66	1		1						2		2		3
42	Meningitis.....	172			6	3				5	3		3	4	3
43	Paralysis.....	662			24	4	1	3	1	17	3		14	21	18
44	Brain disease, etc.....	183			4					2	2	2	1	3	6
45	Cancer.....	644	2		15			1		14	13	1	17	11	22
46	Tumor.....	156			5	2				3			1	1	3
47	Childbirth.....	222			4	8	1	1		2	4		7	2	1
48	Convulsions.....	520	2		8	4	2	4		4	9	1	7	3	6
49	Diabetes.....	111			1	1				7			1	5	6
50	Dropey.....	446			11	6	3	1		8	13		12	8	11
51	Fever.....	100			3	12					5		2	1	
52	Fever, Malarial.....	122			5		1		1	2	6		3	5	4
53	Heart diseases.....	1,429	3		32	9	4			18	31	1	37	29	48
54	Pericarditis.....	80			2					2		1	2	3	3
55	Heart disease, etc.....	996	2		18	7	4			13	26		24	18	35
56	"Heart failure".....	353	1		12	2				3	5		11	8	10
57	Influenza.....	555			14	12	3		4	6	11	3	8	16	20
58	Kidney diseases.....	479			7	1	2	1		5	15	2	11	7	11
59	Kidneys, Inflammation of.....	375			6	1	1	1		5	13	1	9	6	10
60	Kidney disease, etc.....	104			1		1				2	1	2	1	1
61	Liver disease, etc.....	166			7	1			1	2	3		5	1	3
62	Lung diseases.....	1,866	2		43	18	5	3	4	16	46	5	23	12	52
63	Asthma.....	79			1						3			1	2
64	Bronchitis.....	182			3				2				2		2
65	Pleurisy.....	28			1	2					3				1
66	Pneumonia.....	1,385	2		31	16	3	3	2	13	32	4	17	11	39
67	Lungs, Congestion of.....	77			2		1			2	2	1	1		4
68	Lung disease, etc.....	115			5		1			1	3		3		5
69	Rheumatism.....	141			7	1	1	1		1	7		4	2	5
70	Septicæmia.....	177			7	1				4	2		2	4	5
71	Spine disease, etc.....	105				1					7				2
72	Stomach diseases.....	233			6			1		1	6		5	1	8
73	Stomach, Inflammation of.....	64			2						1		1		2
74	Stomach disease, etc.....	169			4			1		1	5		4	1	6
75	Syphilis.....	21									1				
76	Unclassified.....	1,580	3	1	24	14	3	1	2	15	43	9	35	18	38

causes of death in Michigan during the year 1893, by counties.

to Keweenaw.

Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Grand Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.	Keweenaw.	Line number.	
2	3	28	1	10	5	31	2	42	2	1	22	22	32	33	16	28	24	10	8	11	56	64	3	100	37		
---	1	1	---	3	1	9	---	4	---	---	3	2	1	2	4	5	3	1	---	1	12	11	1	18	88		
---	---	4	---	1	---	1	---	---	---	---	---	1	1	2	3	1	2	2	---	---	3	---	---	5	89		
1	---	1	---	2	2	2	1	2	---	---	---	2	1	21	5	4	3	4	1	2	5	3	1	22	40		
---	1	---	---	---	---	1	---	---	---	---	1	1	2	---	1	3	1	2	---	1	7	---	---	2	41		
---	1	5	---	2	1	5	---	4	---	---	---	3	1	3	2	5	2	---	2	2	7	7	---	12	42		
1	---	9	1	2	12	1	32	1	---	12	11	23	1	2	6	13	---	4	22	25	1	33	---	43			
---	---	8	---	---	1	1	---	1	1	6	2	2	2	3	1	3	---	8	---	1	6	10	---	8	44		
---	3	8	---	1	3	7	1	19	1	2	1	6	14	5	1	16	5	3	1	4	19	21	---	44	45		
---	---	3	---	---	1	4	---	3	---	---	---	1	5	1	---	1	2	---	---	5	3	---	8	---	46		
---	1	---	---	---	1	4	1	1	1	4	3	3	2	3	7	4	4	2	1	6	3	2	---	16	47		
---	---	1	1	2	5	1	---	1	---	5	1	3	1	19	10	2	4	2	1	3	5	3	---	31	48		
---	---	---	---	---	---	2	---	2	---	2	---	4	1	---	3	2	---	---	1	4	2	---	10	---	49		
---	1	4	---	---	3	5	4	13	1	---	2	6	5	5	4	6	12	7	1	6	9	9	1	23	50		
7	---	1	---	---	5	---	---	1	---	---	---	---	4	1	---	1	1	---	---	---	1	3	---	3	---	51	
---	---	2	---	---	---	5	---	1	1	2	2	3	---	---	---	2	2	2	---	---	3	---	5	---	52		
6	5	27	1	9	4	27	5	30	---	2	7	18	44	10	9	37	29	1	1	9	36	43	2	74	153		
---	1	2	---	---	1	1	---	1	---	---	2	2	---	1	5	5	---	---	---	2	---	---	2	---	54		
---	4	20	---	7	3	22	3	22	---	2	6	11	31	7	7	22	19	---	1	7	24	31	1	46	155		
6	---	5	1	2	1	4	2	7	---	1	5	11	3	1	10	5	1	---	2	10	12	1	26	---	56		
1	---	5	---	1	2	15	3	20	1	---	7	4	10	9	6	11	10	2	---	8	15	9	---	28	---	57	
---	---	3	---	---	1	11	2	10	1	1	5	4	12	11	8	15	15	7	1	1	16	9	---	17	---	58	
---	---	2	---	---	1	8	2	9	1	1	4	4	9	6	7	15	14	5	---	1	13	5	---	13	---	59	
---	---	1	---	---	3	---	1	---	---	1	---	3	5	1	---	1	2	1	---	3	4	---	4	---	60		
---	---	4	---	3	1	1	---	4	---	2	1	6	2	3	4	3	---	1	1	6	1	2	11	1	61		
7	5	21	1	13	22	17	6	37	2	18	16	6	23	47	21	30	23	8	5	8	61	36	7	127	162		
---	---	1	---	1	3	---	---	1	---	1	1	1	---	2	---	1	2	---	1	1	4	2	---	3	---	63	
1	1	---	---	---	1	2	1	---	1	7	4	---	15	2	---	1	4	---	---	2	1	1	12	1	64		
---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	65	
5	4	17	1	11	16	15	5	32	2	10	9	3	17	27	14	16	15	5	3	6	53	26	3	90	---	66	
---	---	2	---	---	1	1	---	2	---	---	2	1	6	---	4	7	---	1	1	---	1	3	---	8	---	67	
1	---	1	---	---	---	---	---	---	---	---	2	1	6	2	1	4	---	2	---	1	1	2	3	---	12	---	68
---	---	1	---	---	---	3	---	8	---	1	1	1	1	2	1	4	1	---	---	2	4	3	---	11	---	69	
1	1	1	---	3	---	2	2	5	---	1	1	6	---	4	---	3	1	---	1	4	3	---	10	---	70		
---	---	1	2	---	1	---	2	---	1	5	---	1	5	---	1	2	1	---	3	1	1	---	4	---	2	---	71
---	2	2	---	---	1	5	---	5	---	2	3	2	2	6	5	1	5	1	2	1	9	6	---	14	---	72	
---	---	---	---	---	1	---	1	---	---	---	---	1	5	3	---	3	---	1	1	2	---	4	---	73			
---	2	2	---	---	1	4	---	4	---	2	3	2	1	1	2	1	2	1	1	---	7	8	---	10	---	74	
---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	75	
10	1	15	2	8	6	23	5	40	1	7	14	16	23	36	22	24	16	11	2	7	52	39	5	105	5	76	

Table 54.—CONTINUED.—Important diseases returned

Line No.	Causes of death, 1893.	Counties—Lake													
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Manitou.	Marquette.	Mason.	Mecona.	Monroe.
1	TOTAL DEATHS.....	42	217	77	406	186	30	46	305	218	5	491	160	140	190
2	SPECIFIED DISEASES.....	40	180	63	355	158	17	24	272	148	5	348	119	114	136
3	<i>Dangerous Communicable Diseases</i>	18	32	25	78	29	3	7	72	35	2	117	37	33	48
4	Consumption.....	8	18	19	47	18		6	31	13	2	28	16	14	17
5	Other tubercular diseases.....				1	1			6	1			1		1
6	Marasmus.....														
7	Meningitis, Tubercular.....					1			2						1
8	Scrofula.....				1					1					
9	Tabes mesenterica.....								2				1		
10	Other forms of tuberculosis.....								2						
11	Croup.....			2	3			1	1	2		35	1	1	2
12	Croup, Membranous.....				2										2
13	Diphtheria.....	2	3		6	3			20	1		3	4	3	12
14	Erysipelas.....		1			3									1
15	Fever, Puerperal.....		1										2	1	1
16	Fever, Scarlet.....	7	6		2	2			5	1		11	6	4	9
17	Fever, Typhoid.....	1	2	2	9	2	2		8	17		23	7	3	2
18	Fever, Typho-malarial.....			1			1								1
19	Fever, Typhus.....														
20	Glanders.....														
21	Measles.....				1				1			15		2	2
22	—German (Rötheln).....														
23	Small-pox.....														
24	Chicken-pox.....														
25	Whooping-cough.....		1	1	7							2		5	1
26	Bladder diseases.....	1	1						2						
27	Calculus.....								1						
28	Cystitis.....	1	1						1						
29	Bladder disease, etc.....														
30	Bowel diseases.....	3	25	7	38	20	6	8	26	21		51	11	13	32
31	Bowels, Inflammation of.....		7	6	6	7	4	2	8	10		13	2	4	4
32	Diarrhea.....	1	2		1		1		8	1		9			17
33	Cholera infantum.....	2	12	1	22	7	1	5	3	5		27	5	3	9
34	Dysentery.....		1		3	3			3	3			1		
35	Peritonitis.....				1	1				1				1	
36	Bowel disease, etc.....		3		5	2		1	4	1		2	3	5	2

as causes of death in Michigan during the year 1893, by counties.

to Wexford.																							
Monroe.	Montcalm.	M'tmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Oscoda.	Oscoda.	Ottawa.	Presque I.	Roscon'on.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.
291	284	14	412	88	402	121	23	31	116	4	43	867	57	2	958	251	46	254	566	220	250	307	355
227	217	10	345	69	355	102	16	21	94	8	30	205	36	2	812	202	33	215	474	175	207	252	304
65	52	6	109	19	70	30	4	8	33	1	20	71	21	1	226	51	8	49	153	35	57	57	73
25	28	5	48	9	42	15	2	2	16	3	31	1	1	1	86	26	4	21	54	25	25	42	47
1	2	1	1	1	6	1	1	1	1	1	5	1	1	1	3	1	1	1	1	1	1	2	94
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	83
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10
4	1	1	7	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	11
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
17	7	36	2	5	1	2	1	4	11	19	45	15	11	50	2	15	5	176	3	13	14	15	16
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
11	11	12	4	4	5	3	2	1	10	13	6	1	7	24	4	4	10	9	111	5	17	18	19
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
2	2	2	1	2	3	1	1	1	4	1	5	3	3	1	3	2	1	2	36	1	25	26	27
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	28
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
22	29	35	8	19	6	1	2	8	1	23	2	109	26	3	30	66	19	16	29	19	357	7	30
5	3	10	3	6	2	1	1	1	1	8	16	6	1	11	20	3	4	8	3	53	4	31	32
3	2	8	2	2	1	4	1	1	1	11	2	11	2	1	5	1	1	1	1	1	1	1	33
13	21	7	5	5	1	1	3	3	3	68	14	2	9	27	9	8	13	8	117	2	33	34	35
1	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	36
1	1	4	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	37
1	1	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	38

Table 54.—CONCLUDED.—Important diseases returned as

Line number.	Causes of death, 1893.	Counties—Lake																
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Manitou.	Marquette.	Mason.	Mecosta.	Menominee.	Midland.	Missaukee.	Monroe.
37	Brain diseases.....	1	18	3	38	22	2	1	18	18	1	30	11	11	5	5	...	22
38	Apoplexy.....	...	2	1	8	3	...	...	3	1	1	1	2	1	1	1	...	...
39	Brain, Congestion of.....	...	1	...	...	...	...	...	3	2	...	1	...	...	1	...	...	1
40	Brain, Inflammation of.....	...	2	...	2	2	...	1	2	7	...	18	1	3	2	1	...	6
41	Epilepsy.....	...	...	...	1	3	...	...	...	...	...	...	...	...	...	...	...	...
42	Meningitis.....	...	1	...	6	1	...	...	...	1	...	...	3	2	...	2	...	4
43	Paralysis.....	1	11	2	14	11	1	...	7	7	...	10	5	5	...	1	...	11
44	Brain disease, etc.....	...	1	...	7	2	1	...	2	...	...	...	...	...	1	...	...	...
45	{ Cancer.....	...	6	2	23	7	...	...	9	4	...	18	4	3	1	5	1	6
46	{ Tumor.....	...	4	...	4	1	...	...	1	...	1	4	2	2	...	...	...	3
47	Childbirth.....	...	1	2	2	3	...	...	6	3	1	1	2	1	2	...	2	5
48	Convulsions.....	...	2	...	4	2	...	...	9	13	...	10	5	1	11	1	2	3
49	Diabetes.....	...	2	1	3	3	...	...	3	...	...	...	...	...	...	1	...	1
50	Dropsy.....	2	5	1	7	5	2	...	9	3	...	8	...	4	3	...	1	5
51	Fever.....	...	1	...	1	...	...	2	...	1	...	1	1	3	2	2	...	1
52	Fever, Malarial.....	...	...	...	...	2	...	1	4	...	...	...	1	1	...	1	...	...
53	Heart diseases.....	4	20	3	24	22	...	1	28	10	...	19	8	4	2	9	2	23
54	Pericarditis.....	...	...	...	1	1	...	...	6	1	...	...	...	...	...	...	...	3
55	Heart disease, etc.....	1	9	3	10	16	...	1	18	6	...	19	7	2	1	6	2	15
56	"Heart failure".....	3	11	...	13	5	...	...	4	3	...	...	1	2	1	3	...	4
57	Influenza.....	1	5	7	10	5	...	1	14	2	...	28	3	6	...	4	4	8
58	Kidney diseases.....	...	5	...	12	5	...	...	6	2	...	...	4	5	4	3	...	6
59	Kidneys, Inflammat'n of.....	...	5	...	11	3	...	...	3	1	...	...	4	2	3	2	...	4
60	Kidney disease, etc.....	...	...	...	1	2	...	...	3	1	...	...	3	1	1	...	...	2
61	Liver disease, etc.....	...	2	...	4	2	...	...	6	...	...	1	3	1	...	...	...	2
62	Lung diseases.....	9	16	9	38	15	4	...	31	15	...	31	10	11	12	2	2	21
63	Asthma.....	...	3	...	2	...	...	...	1	1	...	1	...	...	...	...	...	1
64	Bronchitis.....	...	...	1	2	2	1	...	...	3	...	8	2	1	...	...	1	2
65	Pleurisy.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
66	Pneumonia.....	6	11	6	34	10	3	...	27	11	...	21	7	9	11	1	...	17
67	Lungs, Congestion of.....	...	1	1	...	...	...	...	1	...	...	1	...	1	...	1	1	...
68	Lung disease, etc.....	3	1	1	...	3	...	...	2	...	...	...	1	...	1	...	...	...
69	Rheumatism.....	...	5	...	5	2	...	...	1	1	...	1	1	2	...	...	1	...
70	Septicæmia.....	...	1	...	6	...	...	1	2	4	...	2	3	...	1	...	1	...
71	Spine disease, etc.....	...	...	...	3	1	...	...	1	3	...	2	...	...	...	...	1	4
72	Stomach diseases.....	...	3	2	6	1	...	...	4	2	...	...	3	2	4	...	...	5
73	Stomach, Inflammat'n of.....	...	...	1	1	...	...	...	3	1	...	...	1	...	1	...	...	1
74	Stomach disease, etc.....	...	3	1	5	1	...	...	1	1	...	...	2	2	3	...	...	4
75	Syphilis.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
76	Unclassified.....	1	26	1	49	11	...	2	20	11	...	24	10	11	14	3	1	24

causes of death in Michigan during the year 1893, by counties.

to Wexford.

Montcalm.	M'tmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Osceola.	Oscoda.	Otsego.	Ottawa.	Presque Isle.	Reconmon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.	Wexford.	Line number.
22	1	43	7	72	8	1		5	1	1	27			54	16	4	31	40	21	15	38	46	236	5	37
7		2	1	11							5			5	6			9	2	3	7	7	38	1	38
1		6	1	3	2			2						1	1			1			2	2	8		39
1	1	15		3	1	1				1	4			7	3	2	5	5	3	4	3	7	65	1	40
		1		8							2			1	2		2		4	1	1	1	4		41
4		4	1	4					1					14		1	4	4	1	2	1	1	14	2	42
9		11	2	15	5			2			14			17	3		18	20	9	4	21	25	64	1	43
		4	2	28				1			2			9	1	1	2	1	2	1	3	3	33		44
6		9	2	21	8	1	1	2		1	14			32	8	1	10	10	9	7	19	13	92		45
3		2	2	2	1			2			2			4	1		4	11		1	3	1	39		46
6		8	2	3				2			4	3		6	2	2	1	5	2	4	2	2	33	1	47
1		5	2	3			2	1		1	9	1		31	5		4	9	4	1	3	6	216		48
6		3	1		1			1			1			1	1	2	3	3	1	4		1	11		49
3		7	4	3	5	1		4			12	1		18	6	1	6	10	8	3	7	10	66	2	50
1		2		2		1					8						1	3	1		1	2	7	1	51
2		1	2	1										5	5		2	6	2	4	2	1	21		52
20		37	6	32	4	3	2	8			27	2		71	9	2	22	30	17	21	30	17	212	6	53
2		5		1							1					1	1	3		1	1	2	11		54
12		29	3	21	3	3	1	7			23	2		55	9	1	11	24	15	13	13	153	6	55	
6		3	3	10	1		1	1			3			16			10	3	2	7	16	2	48		56
4		4	1	7	8		2	4	1	11				15	12		4	14	5	8	3	7	65	7	57
9		14	2	20	2		1	3	1	8				14	5	2	6	15	10	7	12	14	60	1	58
8		13		16	1		1	3	1	7				8	4	1	4	11	10	4	11	12	39	1	59
1		1	2	4	1					1				6	1	1	2	4		3	1	2	21		60
2		5	2	4	1						4	1		7	2			4	1	1	2	2	26		61
20	2	28	5	37	20	1		6	1		30	1		115	21	1	15	39	10	12	20	30	397	9	62
1		1		1	1					2				9	3			4		1		1	14		63
1		4						1		5				11	4		2	2		2	1	5	51	1	64
17	2	22	4	33	17	1		5	1		20			86	10	1	11	26	8	7	18	21	299	4	65
				2													2	4		1	1	1	9	3	67
1		1	1	1	1						3	1		8	1			3	2	1		2	19	1	68
2		4		3							3			5			2	6	2	1	3	2	14		69
3	1	5			1			2			3			11	3	3	2	3	1	5	3	6	23		70
2		1				1						1		10	3		3	1	2	5	2	1	20		71
2		3	1	4	2			1	1	6				11	3		1	10	3	4	3	1	37	1	72
1		2		2						2				5	2			1			1		8	1	73
1		1	1	2	2			1	1	4				6	1		1	9	3	4	2	1	29		74
			1								1											1	16		75
22		20	2	51	5	2	3	1	3	30	4	1		65	23	4	20	36	23	30	11	49	235	4	76

Table 55.—Important diseases and groups of diseases returned as

Line No.	Causes of death, 1860-93.	Years,									
		1893.	1892.	1891.	1890.	1889.	1888.	1887.	1886.	1885.	1884.
1	TOTAL DEATHS	21,982	21,729	22,079	21,842	20,315	21,704	19,482	18,187	16,846	18,056
2	SPECIFIED DISEASES	17,911	17,578	18,115	17,612	16,767	18,114	16,257	15,305	13,766	15,138
3	<i>Dangerous Communica- ble Diseases</i>	5,053	5,029	5,180	5,254	4,762	5,493	5,249	4,976	4,431	5,053
4	Consumption	2,154	2,080	2,060	2,207	2,137	2,424	2,127	2,051	1,964	2,198
5	<i>Other tubercular dis- eases</i>	196	208	176	199	116	141	142	150	147	183
6	Marasmus	89	109	90	74	16	30	21	57	60	44
7	Meningitis, Tuberc.	38	33	27	41	43	47	62	40	34	49
8	Scrofula	21	17	16	34	26	22	27	25	25	42
9	Tabes mesenterica	27	37	28	32	21	31	24	21	19	34
10	<i>Other forms of tu- berculosis</i>	21	12	20	18	10	11	8	7	9	14
11	Croup	217	211	253	415	357	384	282	296	291	285
12	Croup, Membranous	42	80	35	56	46	90	117	104	46	40
13	Diphtheria	959	1,020	1,060	1,266	849	723	985	1,117	1,054	1,065
14	Erysipelas	57	64	66	46	52	82	70	63	68	71
15	Fever, Puerperal	42	42	35	26	32	51	33	30	38	29
16	Fever, Scarlet	380	442	400	222	240	323	318	319	245	326
17	Fever, Typhoid	689	626	684	465	637	638	770	493	387	514
18	Fever, Typho-malarial ..	28	23	16	27	43	31	52	25	7	29
19	Fever, Typhus	4	6	7	11	4	3	7	2	1	5
20	Glanders		1								
21	Measles	127	72	225	229	104	414	285	129	38	144
22	—German (Rötheln)	1	2								
23	Small-pox	3	1	1	6	3	3		6	3	3
24	Chicken-pox	2	4	4	4	2	2	1	1	4	1
25	Whooping-cough	172	147	158	75	140	174	110	185	138	160
26	Bladder diseases	41	50	32	33	40	29	49	40	41	36
27	Calculus	10	11	12	10	7	14	17	12	21	16
28	Cystitis	25	22	17	12	20	5	24	23	15	12
29	Bladder disease, etc.	6	17	3	11	13	10	8	5	5	8
30	Bowel diseases	2,085	1,631	1,900	1,844	1,961	1,947	1,818	1,726	1,210	1,921
31	Bowels, Inflammation of ..	433	334	353	315	352	390	339	327	324	350
32	Diarrhea	371	277	292	325	450	371	414	378	261	409
33	Cholera infantum	833	606	799	592	722	767	626	653	360	781
34	Dysentery	79	74	89	128	158	153	183	158	105	160
35	Peritonitis	83	89	116	98	50	46	35	32	22	27
36	Bowel disease, etc.	236	251	251	386	229	220	221	178	138	194

NOTE.—The arrangement of causes of death is uniform in Tables 53, 54 and 55. For explanation of the terms used, their inclusion and relation to the classifications formerly employed in these reports, see text beginning on page 164, to which reference may be made by line numbers.

causes of death in Michigan for each of the years 1869-93, inclusive.

1869-93.															Line No.
1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	1872.	1871.	1870.	1869.	
16,906	16,425	19,238	16,102	14,407	12,766	12,919	12,576	11,990	12,500	14,258	13,371	9,728	10,766	9,145	1
13,664	13,366	15,922	13,024	11,516	10,057	10,076	9,901	9,257	9,870	11,798	11,243	7,911	8,824	7,292	2
5,082	5,279	6,533	5,263	4,857	3,918	3,833	3,569	3,271	3,322	4,028	4,065	3,082	3,561	2,645	3
1,992	1,804	1,954	1,829	1,680	1,641	1,664	1,590	1,479	1,292	1,447	1,467	1,303	1,451	1,233	4
126	162	174	144	112	125	138	134	128	129	156	149	119	143	80	5
9	52	37	26	9	6	11	8	3	8	10	3		1		6
48	48	64	42	43	55	60	68	60	59	81	84	65	65	11	7
25	29	31	32	36	33	32	26	34	23	43	40	38	60	55	8
32	26	36	28	16	16	23	22	19	28	15	15	12	9	8	9
12	7	6	16	8	15	12	10	12	11	7	7	4	8	6	10
284	303	316	257	233	199	145	157	156	132	166	153	146	124	105	11
32	46	64	65	45	37	19	21	11	10	6	10	9	3		12
1,007	1,416	2,063	1,542	1,480	889	595	327	213	216	219	196	121	121	89	13
55	82	86	88	92	75	69	86	108	104	158	151	87	68	69	14
45	31	57	39	41	16	25	32	42	54	51	44	26	38	21	15
673	592	384	371	418	429	404	399	423	440	580	565	696	882	252	16
439	483	384	513	397	329	446	426	433	611	677	621	357	574	437	17
11	32	49	9	7	18	4	6			7	1				18
11	10	19	11	14	5	29	11	14	16	17	31	8	1	9	19
				1	1						1				20
258	150	256	125	167	16	62	118	134	46	245	180	67	56	147	21
															22
5	101	82	3	6	6	102	76	26	18	91	302	74	10	42	23
2	1	3	2	2	1		5	3	1	1	2	1	1	3	24
92	86	142	264	162	132	131	131	101	153	206	192	68	119	153	25
39	16	28	45	35	37	30	44	40	34	37	33	32	34	30	26
16	6	14	23	23	23	16	34	21	20	25	23	24	25	24	27
17	6	10	18	6	10	11	6	14	7	9	6	4	7	6	28
6	4	4	6	6	4	3	4	5	7	3	4	4	2		29
1,315	1,257	2,201	1,443	1,039	924	1,255	1,208	1,102	1,298	1,566	1,781	885	1,371	983	30
294	276	342	267	237	214	226	239	218	208	286	234	184	187	119	31
267	259	501	310	226	173	290	304	283	380	383	437	216	407	311	32
465	428	857	499	300	243	370	331	289	278	306	394	129	181	108	33
114	96	270	160	135	158	221	195	162	304	319	456	173	374	286	34
16	21	19	10	16	11	8	8	14	8	9	13	7	5	5	35
159	177	213	197	125	125	140	131	136	110	263	247	176	217	204	36

Table 55.—CONCLUDED.—Important diseases returned as

Line No.	Causes of death, 1869-93.	Years,									
		1893.	1892.	1891.	1890.	1889.	1888.	1887.	1886.	1885.	1884.
37	Brain diseases	1,709	1,534	1,614	1,544	1,511	1,615	1,441	1,435	1,304	1,349
38	Apoplexy	240	219	213	153	159	147	141	161	121	132
39	Brain, Congestion of	79	68	87	-----	-----	-----	-----	-----	-----	-----
40	Brain, Inflammation of	307	292	315	318	341	405	319	382	296	310
41	Epilepsy	66	62	42	54	40	65	54	49	50	43
42	Meningitis	172	148	204	180	164	194	184	182	174	234
43	Paralysis	662	571	596	558	542	553	465	465	400	397
44	Brain disease, etc.	183	174	157	281	265	251	278	226	263	238
45	{ Cancer	644	558	534	583	492	480	453	391	403	361
46	{ Tumor	156	139	157	123	102	108	98	91	104	85
47	Childbirth	222	244	255	196	254	250	236	233	230	244
48	Convulsions	520	548	547	349	453	513	474	431	452	436
49	Diabetes	111	69	78	63	74	71	61	68	65	49
50	Dropsy	446	389	397	422	337	464	342	334	330	324
51	Fever	100	129	107	123	111	164	117	123	96	133
52	Fever, Malarial	122	146	133	146	197	200	171	168	142	186
53	Heart diseases	1,429	1,329	1,346	1,186	1,132	1,055	954	794	799	791
54	Pericarditis	80	97	70	70	61	86	107	64	69	70
55	Heart disease, etc.	996	864	901	1,115	1,071	969	847	730	730	721
56	"Heart failure"	353	368	375	-----	-----	-----	-----	-----	-----	-----
57	Influenza	555	907	1,076	1,084	176	2	2	3	2	-----
58	Kidney diseases	479	442	407	331	347	351	327	323	304	264
59	Kidneys, Inflammation of ..	375	332	271	227	242	241	226	244	215	191
60	Kidney disease, etc.	104	110	136	104	105	110	101	78	89	73
61	Liver disease, etc.	166	121	167	140	158	172	154	120	147	154
62	Lung diseases	1,866	1,765	1,702	1,786	1,578	1,889	1,449	1,302	1,194	1,210
63	Asthma	79	65	77	74	59	65	59	66	62	61
64	Bronchitis	182	184	138	188	120	199	121	97	113	98
65	Pleurisy	28	30	24	27	25	46	25	20	16	18
66	Pneumonia	1,385	1,298	1,248	1,224	1,132	1,313	970	857	804	840
67	Lungs, Congestion of	77	87	99	-----	-----	-----	-----	-----	-----	-----
68	Lung disease, etc.	115	101	116	273	242	266	274	262	199	193
69	Rheumatism	141	149	141	120	154	154	158	145	111	133
70	Septicæmia	177	167	172	153	191	157	121	125	129	94
71	Spine disease, etc.	105	94	103	110	124	114	95	131	83	114
72	Stomach diseases	233	178	182	177	153	172	165	118	122	120
73	Stomach, Inflammation of ..	64	53	49	27	39	43	35	37	44	39
74	Stomach disease, etc.	169	125	133	150	114	129	130	81	78	81
75	Syphilis	21	11	6	7	5	14	4	9	16	14
76	Unclassified	1,580	1,949	1,876	1,889	2,455	2,710	2,324	2,230	2,046	2,058

CAUSES OF DEATH, TWENTY-FIVE YEARS, 1869-93.

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causes of death in Michigan, 1869-93.

1869-93.															Line No.
1883.	1882.	1881.	1880.	1879.	1878.	1877.	1876.	1875.	1874.	1873.	1872.	1871.	1870.	1869.	
1,188	1,215	1,353	1,118	944	889	1,001	1,011	850	893	1,655	1,161	679	687	663	37
87	89	111	123	105	95	86	107	94	63	81	70	70	54	65	38
293	276	361	301	222	225	291	275	232	261	333	330	216	233	226	40
45	48	63	41	42	31	35	31	31	30	33	28	25	18	12	41
229	227	332	159	104	110	138	123	166	185	812	360	24	11	13	42
345	357	260	279	262	242	244	233	172	171	171	154	144	122	120	43
189	218	226	215	209	186	207	242	155	183	225	219	200	249	227	44
383	301	310	285	272	269	266	241	203	188	172	133	105	120	113	45
58	68	88	76	65	56	45	41	55	34	48	31	32	23	20	46
238	213	202	201	210	173	166	158	194	209	269	236	158	146	127	47
344	356	337	348	275	288	298	275	258	258	306	315	238	281	256	48
58	52	49	44	42	33	39	19	36	27	31	35	33	29	25	49
296	317	283	272	271	256	236	236	237	245	271	234	228	270	251	50
117	131	193	191	136	124	106	174	132	187	203	219	187	201	289	51
153	193	241	147	125	125	141	108	116	144	201	208	153	163	121	52
762	627	620	551	538	444	448	394	380	411	396	366	291	311	274	53
73	64	101	68	84	76	53	54	68	71	69	56	49	43	22	54
689	563	519	483	454	368	395	340	312	340	327	310	242	268	252	55
2	1	2	3	5	3	2	6	2	12	6	2	57	57	57	57
264	206	187	154	113	113	93	80	54	63	68	60	59	45	32	58
196	145	112	95	54	45	45	32	23	31	32	27	24	12	3	59
68	61	75	59	59	68	48	48	31	32	36	33	35	33	29	60
140	145	143	125	124	141	126	121	112	121	132	135	103	110	71	61
1,204	1,216	1,262	1,279	1,107	859	799	994	1,137	1,223	1,043	962	700	625	621	62
51	50	37	39	39	31	25	23	20	20	21	25	17	22	24	63
83	100	64	50	49	44	42	42	43	32	20	25	19	20	11	64
20	16	19	26	20	16	14	19	14	15	18	20	12	11	9	65
827	834	941	920	794	552	559	693	846	937	793	701	482	405	455	66
223	216	201	244	205	216	159	215	214	219	191	191	170	167	122	67
113	107	123	85	85	61	76	70	74	73	72	101	51	44	49	68
113	80	52	18	6	8	5	5	4	2	2	1	1	1	1	69
108	94	139	76	83	78	85	75	72	120	174	101	38	39	39	70
125	106	127	89	99	85	77	76	73	73	83	72	49	67	34	71
42	33	44	31	32	30	20	22	27	24	36	29	24	23	15	72
83	73	83	58	67	55	57	54	46	49	47	43	25	44	19	73
9	6	3	13	10	2	7	6	7	9	6	3	2	10	2	74
1,553	1,380	1,448	1,199	1,075	1,035	942	996	844	944	1,023	985	809	688	647	75

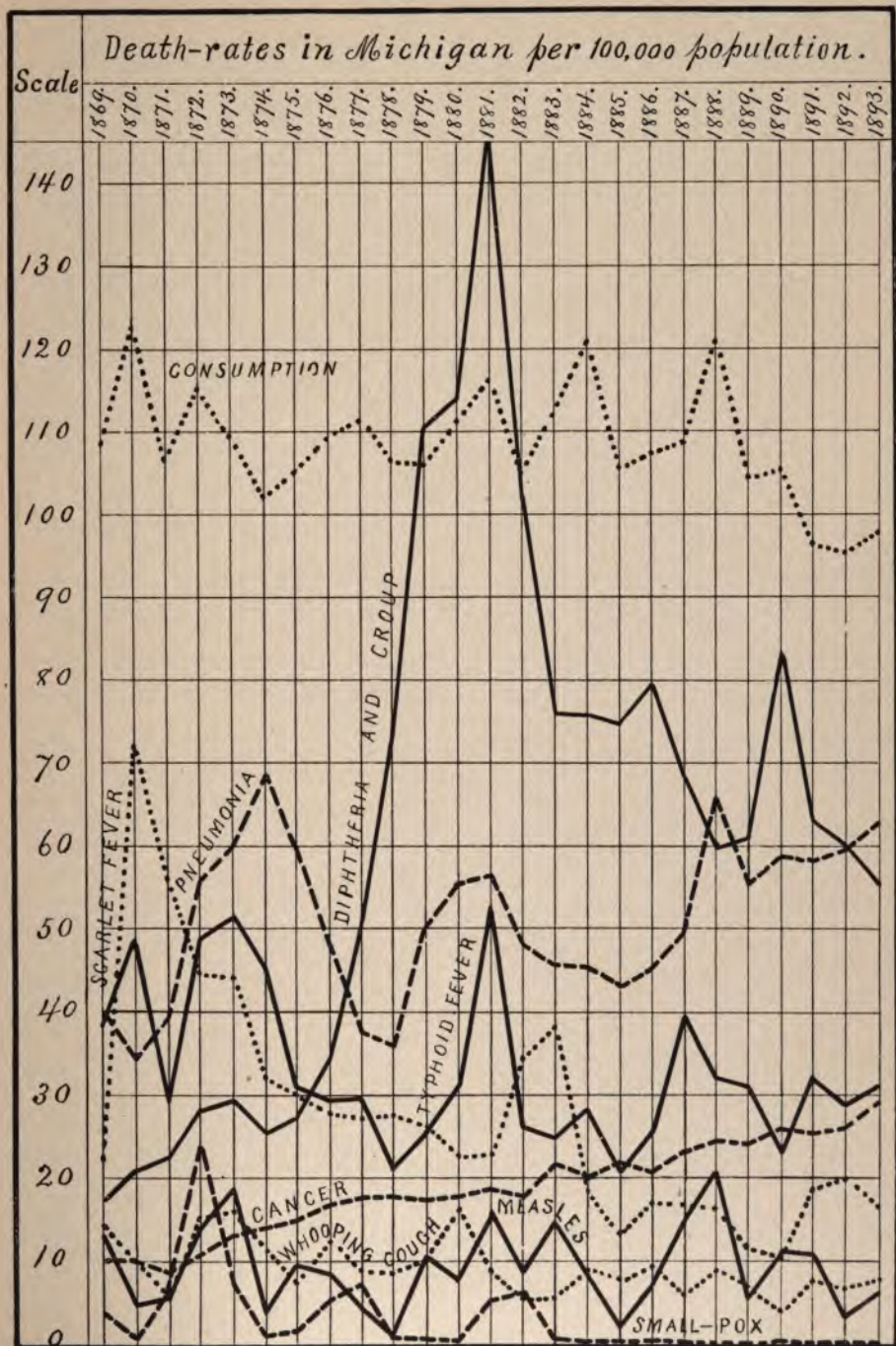
Table 56.—*Death-rates per 100,000 population from certain important dangerous communicable diseases, cancer and pneumonia, for each of the years 1869-93, inclusive.*

Years.	Dangerous communicable diseases.	Consumption.	Diphtheria and croup.	Scarlet fever.	Typhoid fever.	Measles.	Small-pox.	Whooping cough.	Cancer.	Pneumonia.
1869	231.9	108.1	17.0	22.1	38.3	12.9	3.7	13.9	9.9	39.9
1870	300.7	122.5	20.9	72.0	48.5	4.7	0.8	10.1	10.1	34.2
1871	250.7	106.0	22.5	56.6	29.0	5.5	6.0	5.5	8.5	39.2
1872	318.9	115.1	28.2	44.3	48.7	14.1	23.7	15.1	10.4	55.0
1873	305.1	109.6	29.6	43.9	51.3	18.6	7.0	15.6	13.0	60.1
1874	243.3	102.0	26.2	32.2	44.8	3.4	1.3	11.2	13.8	68.6
1875	232.0	104.9	26.9	30.0	30.7	9.5	1.8	7.2	14.4	60.0
1876	245.1	109.2	34.7	27.4	29.3	8.1	5.2	12.4	16.5	47.7
1877	255.3	110.9	50.6	26.9	29.7	4.1	6.8	3.7	17.7	37.2
1878	253.4	106.1	72.8	27.7	21.3	1.0	0.4	8.5	17.4	35.7
1879	305.2	105.6	110.5	26.3	24.9	10.5	0.4	10.2	17.1	49.9
1880	321.5	111.7	113.9	22.7	31.3	7.6	0.2	16.1	17.4	56.2
1881	388.2	116.1	145.2	22.8	52.5	15.2	4.9	8.4	18.4	55.9
1882	305.5	104.4	102.1	34.3	26.8	8.7	5.8	5.0	17.4	48.3
1883	286.4	112.3	75.7	37.9	24.7	14.5	0.3	5.2	21.6	46.6
1884	277.7	120.8	76.4	17.9	28.2	7.9	0.2	8.8	19.9	46.2
1885	237.5	105.3	74.6	13.1	20.7	2.0	0.2	7.4	21.6	43.1
1886	260.4	107.3	79.4	16.7	26.1	6.8	0.3	9.7	20.5	44.8
1887	268.3	108.7	68.2	16.3	39.3	14.6	-----	5.6	23.2	49.6
1888	273.8	121.0	59.8	16.1	31.9	20.6	0.2	8.7	24.0	65.6
1889	232.5	104.3	61.1	11.7	31.1	5.1	0.1	6.8	24.0	55.3
1890	250.9	105.4	83.0	10.6	22.2	10.9	0.3	3.6	25.5	58.5
1891	242.1	96.3	63.0	18.7	32.0	10.5	0.1	7.4	25.0	58.3
1892	230.1	95.2	60.0	20.2	28.6	3.3	0.1	6.7	25.5	59.4
1893*	229.2	97.7	55.2	16.3	31.3	5.8	0.1	7.8	29.2	62.8

* Rates for 1893 based on population as estimated in present report from comparison of State census of 1894 with United States census of 1890; estimates for previous years based on United States censuses only.

Tables 53, 54 and 55, the principal ones relating to diseases returned as causes of death, are presented in the same form as in the last report in all essential details. Table 56 collects the death-rates from certain important diseases, presented in the last report in connection with the remarks on each disease, and adds the rates for the present year. These tables will be used as the basis of the remarks relating to diseases returned as causes of death in Michigan during the year 1893, beginning on page 164, prior to which, however, certain subsidiary tables presenting points of interest relating to the geographical distribution of certain important diseases will be presented.

DIAGRAM II.—COMPARATIVE MORTALITY FROM CERTAIN IMPORTANT DISEASES IN MICHIGAN FOR TWENTY FIVE YEARS, 1869-93.



See Table 56 on opposite page.

Table 57 shows the counties contained in each geographical division of the State, as subdivided for the purpose of more conveniently studying the distribution of causes of death. This arrangement has been in use in these reports from an early date and much valuable information has been accumulated in connection with it in regard to the distribution of diseases. The map showing the distribution of the mortalities from typhoid fever (opposite p. 168) will be useful in showing the relations of these divisions, and also the situations of the different counties of the State to persons not familiar with the geography of Michigan.

The age-distribution of the inhabitants of the several divisions varies widely, and is of importance in considering the distribution of certain diseases. In Table 58 the number and per cent of total deaths of children under five years of age and of persons aged seventy years and over may be seen. This table and also Table 59, which shows the distribution of certain important diseases by geographical divisions, will be referred to again in the text beginning on page 164.

Table 58.—*Comparison, by geographical divisions, of the number and percentage of deaths returned in 1893 from "old age" and of persons aged over 70 years and under 5 years.*

State and geographical divisions.	Deaths at all ages, 1893.	"Old age."		Aged 70 and over.		Aged under 5.	
		Number of deaths.	Per cent of deaths at all ages.	Number of deaths.	Per cent of deaths at all ages.	Number of deaths.	Per cent of deaths at all ages.
State	21,982	750	3.4	3,571	16.2	7,452	33.9
Upper peninsular	2,301	27	1.2	91	4.0	1,278	55.5
Northwestern	650	16	2.5	74	11.4	223	34.3
Northern	410	13	3.2	55	13.4	156	38.0
Northeastern	509	10	2.0	32	6.3	216	42.4
Western	2,432	90	3.7	382	15.7	823	33.8
North-central	625	23	3.7	79	12.6	218	34.9
Eastern	3,288	102	3.1	416	12.7	1,230	37.4
Central	2,654	99	3.7	638	23.9	615	23.2
Southwestern	1,305	47	3.6	299	22.9	334	25.6
South-central	2,976	172	5.8	833	28.0	605	20.3
Southeastern	4,832	151	3.1	677	14.0	1,754	36.3

Table 57.—*Geographical divisions of the State used in the study of causes of death.*

I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.
Upper Peninsular.	Northwest- ern.	Northern.	Northeastern.	Western.	North- central.	Eastern.	Central.	South- western.	South- central.	South- eastern.
Alger.	Benzie.	Antrim.	Alcona.	Kent.	Clare.	Arenac.	Berry.	Allegan.	Branch.	Macomb.
Baraga.	Gr. Traverse.	Charlevoix.	Alpena.	Lake.	Gladwin.	Bay.	Clinton.	Barrien.	Calhoun.	Monroe.
Chippewa.	Leelanau.	Cheboygan.	Iosco.	Mason.	Isabella.	Huron.	Eaton.	Cass.	Hilledale.	Oakland.
Delta.	Manistee.	Crawford.	Montmorency.	Muskegon.	Meosota.	Lapeer.	Genesee.	Van Buren.	Jackson.	Wayne.
Dickinson.	Manitou.	Emmet.	Ogemaw.	Newaygo.	Midland.	Saginaw.	Gratiot.		Kalamazoo.	
Gogebic.	Wexford.	Kalkaska.	Oscoda.	Oceana.	Missaukee.	Sanilac.	Ingham.		Lenawee.	
Houghton.		Otsego.	Presque Isle.	Ottawa.	Oscola.	St. Clair.	Ionis.		St. Joseph.	
Iron.					Hoscommon.	Tuscola.	Livingston.		Washtenaw.	
*Isle Royal.							Montcalm.			
Keweenaw.							Shiawassee.			
Luce.										
Mackinac.										
Marquette.										
Menominee.										
Ontonagon.										
Schoolcraft.										

* Not organized.

Table 59.—Comparison, by geographical divisions, of the number and percentage of deaths in 1893 from certain specified causes: Consumption, pneumonia, influenza, diphtheria, croup, scarlet fever, typhoid fever, diarrheal diseases.

State and geographical divisions.	Deaths from all causes, 1893.	Consumption.		Pneumonia.*		Influenza.		Diphtheria.		Croup.†		Scarlet fever.		Typhoid fever.		Diarrheal diseases.‡	
		Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.	Number of deaths.	Per cent of all causes.
State	21,982	2,154	9.8	1,385	6.3	555	2.5	959	4.4	259	1.2	360	1.6	689	3.1	1,345	6.1
Upper Peninsular.....	2,301	159	6.9	110	4.8	48	2.1	50	2.2	68	3.0	78	3.4	142	6.2	221	9.6
Northwestern.....	650	80	12.3	34	5.2	26	4.0	9	1.4	5	0.8	12	1.8	35	5.4	20	3.1
Northern.....	410	37	9.0	23	5.6	12	2.9	19	4.6	1	0.2	13	3.2	10	2.4	31	7.6
Northeastern.....	509	37	7.3	26	5.1	14	2.8	71	14.0	14	2.7	6	1.2	6	1.2	31	6.1
Western.....	2,432	285	9.7	166	6.8	56	2.3	103	4.2	25	1.0	27	1.1	101	4.2	128	5.1
North-central.....	625	64	10.2	27	4.3	27	4.3	6	1.0	6	1.0	18	2.9	15	2.4	37	5.9
Eastern.....	3,288	296	9.0	189	5.7	71	2.2	334	10.2	69	2.1	73	2.2	72	2.2	232	7.1
Central.....	2,654	293	11.0	149	5.6	84	3.2	86	3.2	14	0.5	22	0.8	71	2.7	126	4.7
Southwestern.....	1,305	156	11.9	76	5.8	31	2.4	18	1.4	6	0.5	6	0.5	37	2.8	60	4.6
South-central.....	2,976	321	10.8	209	7.0	92	3.1	45	1.5	11	0.4	23	0.8	66	2.2	164	5.5
Southeastern.....	4,832	476	9.9	376	7.8	94	1.9	218	4.5	40	0.8	82	1.7	134	2.8	300	6.2

* Includes 48 cases of typhoid pneumonia, 5 cases of pleuro-pneumonia, and 1 case of capillary bronchitis.

† Includes 42 cases of membranous croup, specified as such.

‡ Includes diarrhoea, dysentery, cholera infantum, cholera (nostras), cholera morbus.

DISCUSSION OF TABLES RELATING TO IMPORTANT DISEASES RETURNED AS CAUSES OF DEATH IN MICHIGAN DURING THE YEAR 1893.

The most important of these tables are (1) Table 53, showing the distribution of deaths from each cause by sex, months of the year, and periods of age of the decedents; (2) Table 54, showing the distribution of the total number of deaths from each cause by counties; (3) Table 55, comparing the deaths returned from each cause with the corresponding returns for each previous year of registration; and (4) Table 56 (illustrated by a diagram), which compares the death-rates per 100,000 population of certain important infectious diseases for each year of registration. The following text relating to causes of death in 1893 should be read with constant references to these tables, for convenience in making which, the *line numbers* (in parenthesis), corresponding to each title in the tables are prefixed to each disease discussed. Tables 53, 54 and 55 are uniform in their arrangement and in the inclusion of their terms; certain diseases of slight importance or of indefinite character are consolidated together under a general term of the same nature (e. g. see *brain disease*, *bowel disease*, etc.), or included in the list of unclassified diseases, but in most cases the terms employed include only the exact causes of death as returned. Comparisons may be made with Table 66, the old alphabetical list of causes of death, in which all of these trivial and indefinite returns are separately stated. It is believed that the present arrangement employed in these reports enables a clearer view to be gained of the important facts of registration than the very cumbrous and ambiguous one previously in use. For a full description of the nature and objects of the change in classification, see the last registration report, page 184.

(1) TOTAL DEATHS FROM ALL CAUSES, 21,982. This is the gross number of deaths recorded for the year 1893, and contains, besides deaths from disease, 17,911 in number, 1,019 still-births, 97 premature births, 1,175 deaths from violent causes, accidental, suicidal and homicidal, and 1,780 deaths of which the causes were entirely "unknown" or unspecified. While it is manifestly improper to employ this total number of deaths, containing as it does such a large portion of deaths from unknown causes, as the basis from which the proportion of deaths from any specified cause may be estimated, it is evident that the gross number of deaths is perfectly comparable with the total deaths registered for previous years, in which the same indefinite returns are included. For such comparisons, see the table of death-rates for each year of registration in a previous part of this report (Table 4, Part I.)

(2) SPECIFIED DISEASES, 17,911. Of the 21,982 deaths reported for the year 1893, 17,911 were stated to have been caused by diseases of various kinds. This number is accordingly used as the basis of reference to which percentage comparisons of the proportion of deaths from any specified disease should be made. It will be found of especial value in making such comparisons by counties, since it equalizes, to some degree, the varying degrees of accuracy in registration. In some counties careless and inaccurate registration may cause a very large number of deaths from unspecified causes to be returned. If the ratio from any specified cause be referred to the total number the percentages will appear too low as compared with any county having a less proportion of unspecified causes of death. Still-births are also subject to great variations in accuracy of registration, in different counties, while it is evident that for sanitary purposes, the most important uses to which these mortality statistics are put, deaths from accidents and other forms of violence have little significance.

DANGEROUS COMMUNICABLE DISEASES.

(3) *Dangerous Communicable Diseases, 5,053.* While all diseases that cause death are dangerous, and all of the specific infectious diseases are, under proper conditions, communicable, this group does not exactly correspond, for the purposes of the present report, with the class of specific infectious diseases. For reasons already stated, it seemed desirable to make a practical division in the arrangement of causes of death in this report based on the efforts at prevention and restriction of certain diseases by the Michigan State Board of Health. This list, therefore, contains only such diseases (with one trifling exception) as have been put under ban by the health service of the State, and will hence be of special value as an index of the efficiency of the restrictive and preventive methods adopted.

In the case of consumption, the most important disease of all, its position in the list of dangerous communicable diseases for the year is somewhat anticipatory, since the action of the State Board of Health in regard to it did not take effect until September 30, 1893. This is of no practical moment, since it is designed to place all infectious diseases in this list as soon as action is taken upon them by the State Board, and to include them in the table of previous years (Table 55) in the corresponding position.

(4) *Consumption, 2,154.* Large as the reported number of deaths from consumption in Michigan is each year, it by no means represents the total number of deaths caused by the *bacillus tuberculosis*. The number given above should be increased by about ten per cent to admit the deaths caused by forms of tuberculosis other than pulmonary, such as tabes mesenterica, tubercular meningitis, etc., and this aggregate of deaths reported should undoubtedly be increased by a large amount—perhaps fully 60 per cent—in order to allow for the large deficiency in the returns under the imperfect system of registration in Michigan. It may be said without question that from 3,000 to 3,500 inhabitants of Michigan die each year from the effects of this entirely preventable disease, tuberculosis.

The course of consumption in Michigan has been very regular for the past twenty-five years, as seen in Table 56 and Diagram II, representing the death-rates given therein. The greatest amount of fluctuation in any one direction has been the diminished mortality reported for the last few years, 1890-93, but this decrease, it is believed, is rather apparent than real, being due to the prevalence of epidemic influenza and the great tendency to report deaths of consumptives, whose deaths may, indeed, have been hastened by the epidemic, to the immediate cause rather than to the disease that had weakened the vital resistance and thus prepared the way for the fatal result.

(5) *Other tubercular diseases, 196:* (6) *Marasmus, 89;* (7) *Tubercular meningitis, 38;* (8) *Scrofula, 21;* (9) *Tabes mesenterica, 27;* (10) *Other forms of tuberculosis, 21.* Of the deaths from tubercular meningitis, 7 were returned as such and the remainder either as hydrocephalus or "dropsy of brain." Scrofula includes 3 cases of "glandular disease." In tabes mesenterica are 25 deaths returned from "consumption of bowels" and 2 cases of tubercular enteritis. Other forms of tuberculosis include 13 deaths from hip-joint disease, 1 white swelling of knee-joint, 4 consumption of liver, 1 consumption of bladder, 1 consumption of kidneys and 1 "tubercular something." The above inclusions are made in order to conform, so far as possible, with the previous usage of these reports, but the supposition that all of the cases included are really tubercular in character is more than doubtful. Thus, nearly all of the returns

of marasmus come from a certain hospital in Detroit, and imply, in all probability, merely a wasting disease of any nature, perhaps consequent on cholera infantum or some other intestinal disorder.

Taken altogether, this group may stand for some important causes of death due to the bacillus tuberculosis, that we do not have accurately returned at present. Many deaths from "unknown" causes, "weakness," "malnutrition," etc., should properly be reported under this head. Much educational work is necessary before we shall have an exact statistical account of the protean forms in which the tubercle bacillus attacks the human organism, and the importance of deriving our information directly from physicians' certificates of causes of death is nowhere more forcibly indicated than in regard to these obscure diseases.

Diphtheria and Croup, 1,218; (11) Croup, 217; (12) Membranous croup, 42; (13) Diphtheria, 959. For practical sanitary purposes diphtheria and croup are identical, and are so treated by sanitary (and many registration) authorities at the present day. In this report the deaths from diphtheria, membranous croup and croup (unspecified) are distinguished in the tables as in previous years, but it is recommended that the aggregate number of deaths from the three classes of returns be considered rather than that reliance be placed on those returned as diphtheria only. In most counties the ratios between deaths from croup and diphtheria are quite constant, but in some the tendency is to report fatal cases of what is probably the same disease as croup; in others, as diphtheria.

Next to tuberculosis, diphtheria is the most formidable infectious disease commonly prevalent in this State. Its fluctuations during successive years of registration may be studied in Table 56 (in which deaths from croup are included), and in the diagram. The most remarkable facts in regard to the course of diphtheria in this State are its immense increase from 1876 to 1881, in which year the deaths reported were more numerous than those from any other cause, even largely exceeding the mortality from consumption, and its gradual decline since 1881, with occasional exacerbations, until the present year, which presents the lowest death-rate from diphtheria and croup recorded since it began to increase in 1877.

In the last report a colored map was given showing the geographical distribution of diphtheria and croup, by counties, for the five year period 1888-92. It was there seen that this disease prevails most intensely in the counties having cities of considerable size and in the northern part of the lower peninsula and in the upper peninsula. A study of the geographical distribution of the deaths reported from diphtheria and croup for the year 1893 would give substantially the same results.

(14) *Erysipelas, 57.* This disease is of comparatively small importance as a cause of death in this State. As shown in Table 55 the number of deaths annually reported has decreased since the early years of registration. This decrease is exclusive of deaths from septicæmia which were formerly compiled under this title, but are now separately stated.

(15) *Puerperal fever, 42.* About the same number of deaths has been reported from this cause for each year of registration, which would indicate, with the increased population of the State, a decrease in mortality. There are probably some deaths in each year included under child-birth, peritonitis and septicæmia, which properly belong here, but are not definitely specified in the returns.

(16) **Scarlet fever, 360.** This number shows a marked decrease from that recorded for the preceding year, 442. The crest of the recent wave of prevalence would seem to have been reached in 1892, perhaps aborted somewhat by restrictive measures, and the diminished prevalence shown in 1893 may be expected to continue for a year or two. It is important that these natural fluctuations be recognized, as without such recognition the regular periodic movement of the disease may be ascribed to changes in efficiency of the public health service. This has been done in Michigan quite recently, the diminished prevalence of scarlet fever in Detroit in 1893 and 1894, which was common to the entire State, being contrasted with the mortality from the disease in 1891 and 1892, and entirely erroneous conclusions were based on such comparison.

The general course of scarlet fever in the State since the first years of registration may be seen in Table 56, represented graphically by Diagram II, in which the death-rates are given with proper allowance for increased population. The progressive decline in the death-rates from this cause gives satisfactory evidence of the value of the methods of isolation and disinfection now so generally in use throughout the State. The disease is now much less important, as a cause of death, than typhoid fever, with which it formerly ranked, and is but slightly more fatal than measles and whooping-cough.

(17) **Typhoid fever, 689;** (18) **Typho-malarial fever, 28;** (19) **Typhus fever, 4.** There has probably been little or no typhus fever in Michigan in recent years, the few cases so returned being probably typhoid fever. Deaths from "typho-malarial fever" are at present considered for practical sanitary purposes as equivalent to typhoid fever. In the tables the three terms are employed for the purpose of comparison with former reports, but it would be preferable to employ the term *enteric fever*, especially if the returns were based upon death-certificates from physicians, and in consequence the correctness of the statements made were subject to less doubt than at present.

The course of typhoid fever in Michigan since the first years of registration may be studied in Table 56 and Diagram II, in the latter of which, moreover, comparisons may be readily made of the relative importance of typhoid fever and certain other important infectious diseases as causes of death for each year of registration. While the death-rate at present is decidedly lower than it was during the first six years shown in the diagram, namely, from 1869 to 1874, no very marked lessening of the mortality from this cause is observed in recent years. The years 1881 and 1887 present mortalities high above the average from this disease, and the years 1878, 1885 and 1890 show diminished prevalence.

Comparison of the reported death-rates from typhoid fever in several states having more or less perfect registration, indicates that the mortality from this cause is somewhat higher in the western states than in the eastern states at present; that, moreover, a constant diminution in the typhoid fever death-rate has taken place in the latter during the past fifteen years, while that of the western states has remained substantially constant. Typhoid fever may be expected to be less readily restricted by the temporary measures of isolation and disinfection employed during the actual prevalence of the disease, and more dependent upon permanent sanitary improvements affecting the water supply and drainage of communities, than the other infectious diseases commonly dealt with by boards of health.

The distribution of typhoid fever may be studied by geographical divisions in Table 59 as returned for the year 1893. There are many differences as compared with the

corresponding distribution for 1892, among which may be noted a generally increased percentage in the northern and western divisions. The upper peninsular division has, as is usually the case, the highest percentage of deaths from typhoid fever of any division in the State.

A more satisfactory method of studying the geographical distribution is that employed in the study of consumption, diphtheria and croup in the last report, namely, taking the average death-rate for a series of years. In the following statement, the average number of deaths in each county for the five-year period 1888-92 is stated, and the corresponding death-rate per 100,000 mean population (that of the census of 1890) is calculated. The results are graphically shown in the Map opposite this page, five groups of counties being distinguished, as follows: (1) Counties having a death-rate from typhoid fever over fifty per cent above the average for the State; (2) counties with death rates above the average but less than fifty per cent above it; (3) counties with less than the average death-rate, but less than fifty per cent below it; (4) counties having death-rates over fifty per cent below the average; (5) counties, generally of very sparse population, in which no deaths from typhoid fever were reported for the past five years. The number immediately following the name of the county in the list below is the average number of deaths returned for the five-year period, 1888-92; the second number, in *italics*, represents the death-rate:

DEATHS AND DEATH-RATES FROM TYPHOID FEVER PER 100,000 POPULATION IN MICHIGAN, BY COUNTIES, 1888-92.

(STATE: Average number of deaths per annum, 611.0; *mean death-rate*, 29.2.)

Over fifty per cent above the average: Baraga, 9.6, *316.2*; Delta, 8.4, *54.8*; Dickinson, Iron, Marquette, Menominee (taken together since Dickinson was formed from the three others in 1891), 58.4, *75.3*; Gogebic, 14.8, *112.4*; Ingham, 20.2, *53.6*; Keweenaw, 1.8, *62.2*.

Less than fifty per cent above the average: Allegan, 11.8, *30.3*; Berrien, 17.0, *41.2*; Clinton, 10.2, *38.5*; Houghton, 11.2, *31.6*; Kalkaska, 2.2, *42.6*; Kent, 45.2, *41.1*; Leelanau, 2.4, *30.2*; Mason, 4.8, *29.3*; Missaukee, 1.6, *31.7*; Oceana, 4.8, *30.6*; Saginaw, 31.0, *37.7*; Shiawassee, 9.4, *30.4*; St. Clair, 17.8, *34.2*; Wayne, 84.0, *32.7*; Wexford, 3.4, *30.1*.

Less than fifty per cent below the average: Alger, 0.2, *16.2*; Antrim, 2.0, *19.2*; Barry, 6.8, *28.6*; Bay, 16.4, *29.1*; Benzie, 0.8, *15.3*; Branch, 6.2, *23.1*; Calhoun, 9.4, *21.6*; Cass, 3.8, *18.1*; Cheboygan, 2.4, *20.0*; Chippewa, 2.8, *23.3*; Clare, 2.0, *26.5*; Eaton, 6.6, *20.6*; Emmet, 1.8, *20.6*; Genesee, 6.2, *15.7*; Gratiot, 4.8, *16.7*; Hillsdale, 7.8, *25.4*; Huron, 5.8, *20.3*; Iosco, 2.4, *15.7*; Isabella, 4.6, *24.5*; Jackson, 9.8, *21.8*; Kalamazoo, 7.0, *17.8*; Lenawee, 12.8, *26.4*; Luce, 0.4, *16.3*; Macomb, 8.6, *27.0*; Manistee, 6.6, *27.2*; Mecosta, 4.6, *23.4*; Midland, 1.8, *16.9*; Monroe, 6.4, *19.8*; Montcalm, 6.2, *19.0*; Muskegon, 8.8, *22.0*; Newaygo, 4.8, *23.4*; Osceola, 2.8, *19.1*; Ottawa, 9.8, *27.7*; Sanilac, 7.0, *21.5*; St. Joseph, 6.6, *26.0*; Tuscola, 6.6, *20.3*; Van Buren, 8.6, *28.2*.

Over 50 per cent below the average: Alpena, 1.2, *7.7*; Arenac, 0.4, *7.0*; Charlevoix, 1.2, *12.4*; Crawford, 0.2, *6.8*; Gladwin, 0.4, *9.5*; Grand Traverse, 1.2, *9.0*; Ionia, 4.8, *14.6*; Lake, 0.6, *9.2*; Lapeer, 3.6, *12.3*; Livingston, 3.0, *14.4*; Mackinac, 0.2, *2.6*; Oakland, 6.0, *14.5*; Ogemaw, 0.8, *14.3*; Ontonagon, 0.2, *5.3*; Oscoda, 0.2, *10.5*; Otsego, 0.6, *14.0*; Presque Isle, 0.2, *4.3*; Schoolcraft, 0.6, *10.3*; Washtenaw, 3.6, *8.5*.

No deaths reported from typhoid fever for five years, 1888-92: Alcona, Manitou, Montmorency, Roscommon. The aggregate population of these four counties in 1894 was only 10,420 persons.



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for the five-year
State, 29.2)

More than 50%

Less than 50%

Less than 50%

More than 50%

No deaths rep
diseases,

While the above method of comparing the average mortality of each county for a period of years with the average mortality of the State for the same period is useful as indicating the most important facts relating to the geographical distribution of any disease through the State, for many purposes a more minute study of the prevalence of typhoid fever from year to year in each county is desirable. A county having about the same number of deaths from typhoid fever each year is in a more unsatisfactory condition from a sanitary standpoint than a county with precisely the same average death-rate, but in which an epidemic of the disease has caused an unusually large number of deaths in a certain year, thus raising the average for the period taken above the normal. In the former case constant unsanitary conditions prevail; in the latter temporary failure in some essential point, as, for example, a contaminated water-supply, has caused a local epidemic which may be readily checked by removal of the cause. As a case in point compare the deaths stated to have been returned from typhoid fever in Table 60 for the counties of Allegan and Houghton. The populations of these counties in 1890 were 38,961 and 35,389, respectively; the average deaths recorded for the five-year period 1888-92 were 11.8 and 11.2; and the death-rates per 1,000 population for the same period were 30.3 and 31.6. But this death-rate for the county of Allegan was raised much above the average by the epidemic that prevailed in 1888, causing 27 deaths; the average for the following years is only about 8 deaths per annum. In Houghton county, on the contrary, the death-rate for each year is closer to the average death-rate, which, therefore, is more truly representative of the prevalence of this disease in this county in ordinary years.

Table 60 is also of interest because it enables the mortality from typhoid fever in each county for the year 1893 to be readily compared with the average for the preceding five-year period. The following counties show a marked diminution of the death-rate from this disease in 1893: Baraga, Cass, Clinton, Delta, Genesee, Hillsdale, Ingham, Iosco, Kalkaska, Keweenaw, Saginaw, St. Joseph, Tuscola. The following counties show a considerably increased death-rate from typhoid fever in 1893: Alpena, Branch, Eaton, Emmet, Gogebic, Grand Traverse, Luce, Manistee, Mason, Monroe, Montcalm, Muskegon, Ontonagon, St. Clair, Washtenaw, Wayne.

Table 60.—Deaths reported from typhoid fever, by counties, for five years, 1888-92, with average and rate per 1,000 population for each county; also deaths and death-rates for the year 1893.

State and counties.	Years, 1888-92.					Average, five years, 1888-92.		Year, 1893.	
	1888.	1889.	1890.	1891.	1892.	Num-ber.	Rate.	Num-ber.	Rate.
State.....	642	638	465	684	626	611.0	29.2	689	31.3
Alcona.....									
Alger.....	1					.2	16.2		
Allegan.....	27	6	9	9	8	11.8	30.3	8	20.4
Alpena.....	2	1		3		1.2	7.7	5	29.1
Antrim.....	1	5	4			2.0	19.2	2	16.8
Arenac.....		1			1	.4	7.0	1	15.1
Baraga.....	16	8	8	9	7	9.6	316.2	3	76.3
Barry.....	9	7	3	11	4	6.8	28.6	5	21.1
Bay.....	3	12	17	38	12	16.4	29.1	17	28.3
Benzie.....	1			3		.8	15.3	1	13.6
Berrien.....	28	14	15	18	10	17.0	41.2	17	33.2
Branch.....	10	4	5	7	5	6.2	23.1	12	45.5
Calhoun.....	10	8	9	9	11	9.4	21.6	10	21.5
Cass.....	6	2	3	3	5	3.8	18.1	2	9.5
Charlevoix.....		4		2		1.2	12.4		
Cheboygan.....	7	1	2		2	2.4	20.0	1	7.5
Chippewa.....	1	7	4	2		2.8	23.3		
Clare.....	2	2	3	1	2	2.0	26.5	2	25.4
Clinton.....	6	10	15	10	7	10.2	38.5	5	19.0
Crawford.....				1		.2	6.8		
Delta.....	17	7	3	6	9	8.4	54.8	5	27.4
Dickinson*.....				26	3			7	
Eaton.....	10	6	8	8	1	6.6	20.6	11	33.9
Emmet.....	2	1		4	2	1.8	20.6	5	50.1
Genesee.....	7	7	3	7	7	6.2	15.7	2	5.0
Gladwin.....	1				1	.4	9.5		
Gogebic.....	8	26	4	7	29	14.8	112.4	82	591.9
Grand Traverse.....	3	2		1		1.2	9.0	10	60.7
Gratiot.....	8	6	3	3	4	4.8	18.7	6	20.9
Hillsdale.....	9	3	10	9	8	7.8	25.4	4	13.2
Houghton.....	7	11	8	12	18	11.2	31.6	13	31.0
Huron.....	3	12	1	8	5	5.8	20.3	5	16.0

* Dickinson, Iron, Marquette and Menominee are grouped together at end of table.

TYPHOID FEVER BY COUNTIES.

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Table 60.—CONTINUED.—Deaths reported from typhoid fever, by counties.

Counties.	Years, 1888-92.					Average, five years, 1888-92.		Year, 1893.	
	1888.	1889.	1890.	1891.	1892.	Number.	Rate.	Number.	Rate.
Ingham.....	28	20	23	19	11	20.2	53.6	11	28.1
Ionia.....	8	6	1	4	5	4.8	14.6	11	32.1
Iosco.....	3	2	1	5	1	2.4	15.7	1	7.7
Iron*.....	2				8				
Isabella.....	7	5	7	3	1	4.6	24.5	4	19.3
Jackson.....	5	5	9	20	10	9.8	21.8	9	19.5
Kalamazoo.....	4	10	9	3	9	7.0	17.8	9	21.8
Kalkaska.....	1	4	1	3	2	2.2	42.6	1	18.1
Kent.....	37	46	49	37	57	45.2	41.1	62	52.1
Keweenaw.....	1	1	1	2	4	1.8	62.2	1	35.4
Lake.....	1	1		1		.6	9.2	1	16.5
Lapeer.....	6	3	2	4	3	3.6	12.3	2	6.9
Leelanau.....	1	8	2	1		2.4	30.2	2	22.1
Lenawee.....	20	14	10	14	6	12.8	26.4	9	18.5
Livingston.....	7	6	1		1	3.0	14.4	2	9.7
Luce.....	1			1		.4	16.3	2	84.2
Mackinac.....	1					.2	2.6		
Macomb.....	10	6	11	13	3	8.6	27.0	8	24.8
Manistee.....	9	6	5	8	5	6.6	27.2	17	66.3
Manitou.....									
Marquette*.....	18	46	18	82	88			23	
Mason.....	3	8	1	8	4	4.8	29.3	7	39.1
Mecosta.....	8	4	5	6		4.6	23.4	3	14.7
Menominee*.....	12	15	14	3	7			2	
Midland.....	1	2	2	1	3	1.8	16.9	1	7.9
Missaukee.....	3			4	1	1.6	31.7	3	46.3
Monroe.....	5	9	6	4	8	6.4	19.8	11	33.4
Montcalm.....	7	9	3	5	7	6.2	19.0	11	32.6
Montmorency.....									
Muskegon.....	14	14	2	7	7	8.8	22.0	12	31.6
Newaygo.....	8	4	3	4	5	4.8	23.4	4	20.6
Oakland.....	5	7	5	5	8	6.0	14.5	4	9.5
Oceana.....	5	5	3	7	4	4.8	30.6	5	30.5
Ogemaw.....	2			2		.8	14.3		
Ontonagon.....			1			.2	5.3	3	49.2

* Dickinson, Iron, Marquette and Menominee are grouped together at end of table.

Table 60.—CONCLUDED.—Deaths reported from typhoid fever, by counties.

Counties.	Years, 1888-92.					Average, five years, 1888-92.		Year, 1893.	
	1888.	1889.	1890.	1891.	1892.	Num-ber.	Rate.	Num-ber.	Rate.
Osceola.....	4	2	2	3	3	2.8	19.1	2	12.5
Oscoda.....					1	.2	10.5		
Otsego.....	1	1		1		.6	14.0	1	21.4
Ottawa.....	6	19	8	6	10	9.8	27.7	10	26.2
Presque Isle.....		1				.2	4.3		
Rosecommon.....									
Saginaw.....	27	35	27	40	26	31.0	37.7	13	15.9
Sanilac.....	11	10	1	8	5	7.0	21.5	6	17.9
Schoolcraft.....	2		1			.6	10.3	1	14.7
Shiawassee.....	18	11	6	9	3	9.4	30.4	7	21.6
St. Clair.....	20	14	15	8	32	17.8	34.2	24	44.6
St. Joseph.....	8	12	7	4	2	6.6	26.0	4	15.9
Tuscola.....	8	8	2	5	10	6.6	20.3	4	11.8
Van Buren.....	9	5	10	14	5	8.6	28.2	10	32.3
Washtenaw.....	5	6	1	3	3	3.6	8.5	9	20.8
Wayne.....	72	70	50	86	142	84.0	32.7	111	39.1
Wexford.....		5	3	4	5	3.4	30.1	5	37.4
Dickinson, Iron, Marquette and Menominee	32	61	32	111	56	58.4	75.3	32	42.3

EPIDEMIC OF TYPHOID FEVER AT IRONWOOD, GOGEBIC COUNTY.

The death-rate from typhoid fever for Gogebic county in the year 1893 was immensely high, being 591.9 per 100,000 population or 5.9 per 1,000. Of the 82 deaths reported from this cause, 78 occurred in the city of Ironwood. The total number of deaths from all causes reported from Gogebic county was 257, of which 189 were definitely specified as to the cause of death. The proportion of deaths from typhoid fever is, therefore, 31.9 per cent of deaths from all causes, or 43.4 per cent of deaths from specified diseases. The following is a statement, by months, of the deaths returned from typhoid fever in the city of Ironwood by the State registration system:

	Year, 1893.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Number of deaths..	*78	2	3	1	4	2	15	8	20	8	4	6	4

* Including one death in unspecified month.

The water supply of Ironwood consisted (1) of shallow wells supplied with subsoil water, and frequently subject to contamination from privy vaults in their immediate neighborhood; and (2) of a system of water works deriving its supply from the Montreal river. As the river received seepage from a portion of the town above the intake, it is probable that both sources of water supply were constantly contaminated. That at least one of the supplies was contaminated is indicated also by the fact that typhoid fever has prevailed extensively in this city in previous years, although never to so great an extent as in 1893. The immediate cause for its spread during the summer of 1893 appears to consist of certain irregularities in connection with the basin from which the water was pumped into the standpipe and city mains. According to the report of an investigating committee of the common council on June 12, it was found: "That for a long time the filter was not in use at all; that during the freshet [in May], the water from the river was allowed to run directly into the well [basin], from which the water is pumped into the city mains; that a closet vault in close proximity to said well has been overflowed, and its contents may have been circulated through the water mains; that when the intake pipe became choked, a hole had been made in the side of the well, thus allowing the water to run directly from the river; that on pumping the water out of said well we found surface water running through several parts of the wall thereof; that a large deposit of filth was found in the bottom of the standpipe on Norrie Hill."

Dr. Baker, who investigated the causes of the epidemic on behalf of the State Board of Health, says: "When the freshet occurred, the intake pipe clogged up, and the hole was made in the side of the receiving basin; the water went into the basin, not exactly from the river, but from the overflow water very near where the privy was. As soon as the intake pipe was again available, the hole in the side of the basin was imperfectly closed, and banked outside by earth from where the privy stood. When the basin was pumped full the water leaked out of the basin at the imperfectly repaired hole; when the pumps stopped pumping water in and pumped water out of the basin, the overflow water, saturated with soakings from the privy soil, leaked *into* the basin. This resulted in fouling the city water supply intermittently.

"That the outbreak of fever in June was caused by the accidents or occurrences at the pumping station, incident to the freshet, I have no doubt. The outbreak followed that fouling of the city water supply at the time it should have done if it were the result of it. Whether or not the basin was properly repaired as I recommended, I do not know, but soon after I was there the fever abated. But it soon rose again, and was then attributed to the fouling of the wells, because of cases which had been scattered all over the city. However, unless the basin was cleaned and repaired, and other changes made, the rise in August may have been due to causes similar to those which caused the outbreak in June."

Great alarm existed in the city during the prevalence of the epidemic, there being over 200 cases present at one time. The State Board of Health was called upon for assistance, and, through its secretary, personally investigated the causes contributory to the epidemic; samples of water from the basin from which the city supply came were sent by Dr. Baker to the State Laboratory of Hygiene, and were found by Dr. Vaughan to contain germs that, while not positively identifiable with the recognized bacillus of typhoid fever, rapidly caused death when injected into white rats, and were considered by him to stand in a causal relation to the disease. For a fuller account of this subject, see the Annual Report of the State Board of Health for 1893

(not yet published), from matter prepared for which the above statements relating especially to the causation of the epidemic are derived, and also an article by Dr. Vaughan on the "Bacteriological Study of Water," in the American Journal of the Medical Sciences, August, 1892.

(20) **Glanders.** Only four deaths have been recorded from this disease in Michigan since the establishment of registration. None occurred in the present year.

(21) **Measles, 127.** The measles curve is subject to great fluctuations, as may be seen in Diagram II, and the year 1893 was a year of diminished prevalence, although the number of deaths reported was considerably greater than for the preceding year (72). It is probable that restrictive measures are not so thoroughly carried out in the case of this disease as with other diseases dangerous to the public health on account of the general belief in its slight importance.

(22) **German measles, 1.** German measles or r6theln is of little importance as a cause of death. It is included in the list of dangerous communicable diseases chiefly from the liability of scarlet fever to be mistaken for it, with which disease it has a closer relationship than with measles proper. No deaths appear to have been recorded from this cause prior to 1892, although it is not unlikely that an occasional one has been included among deaths from measles.

(23) **Small-pox, 3.** Only three deaths were registered from small-pox in 1893, and the total number of deaths for the past ten years amounts only to 29. This disease, once so formidable in its effects on the death-rate, would seem to have been practically annihilated and to have become of merely historical interest, were not the possibility always present of an epidemic being lighted up by neglect of vaccination and proper sanitary measures.

In Diagram II small-pox is seen to have caused a much smaller amount of mortality than any other of the infectious diseases represented for the past 11 years, while its maxima, in 1872, 1877 and 1881-82, approximate only to those of measles and whooping cough, being much less than the death-rates shown for scarlet fever, typhoid fever and diphtheria. It is true, nevertheless, that no disease strikes such terror into the community nor causes such active measures of restriction to be employed.

The following year, 1894, will see a marked rise in the prevalence of this disease, 60 deaths having been returned to the State Board of Health as having occurred in Michigan during the year, of which number 34 occurred in Detroit. This would correspond to a death-rate of 2.7 per 100,000 population, or less than one-half as great a mortality as obtained in the last "epidemic" of 1881-82.

(24) **Chicken-pox, 2.** This disease has not yet been officially included in the list of dangerous communicable diseases, although it is probable that this will be done. While unimportant in itself, it is exceedingly liable to be confused with small-pox, especially at the beginning of an epidemic of the latter, and hence its public health importance.

(25) **Whooping-cough, 172.** A slight increase is noted in the prevalence of this disease as compared with the preceding year. The mortality for previous years of registration may be conveniently examined in Table 56 and Diagram II, from which it appears that the course of this disease has been very uniform in recent years, although showing some decrease since the earlier years of registration. It now causes usually a less number of deaths than measles each year, while from 1869 to 1880 it caused a somewhat larger number on the average. Considering its importance as a cause of death, much less serious effort has been expended upon its restriction than upon some other infectious diseases.

DISEASES NOT CLASSED (AT PRESENT)* AS DANGEROUS COMMUNICABLE DISEASES.

(26) *Bladder diseases*, 41: (27) Calculus, 10; (28) Cystitis, 25; (29) Bladder disease etc., 6. These are mostly diseases of elderly persons. Cystitis includes three deaths from abscess of bladder. Two cases of enlarged prostate are included in "bladder disease, etc.," and one of extravasation of urine. Calculus and cystitis were separately stated in the old classification employed in these reports, but all other diseases of the bladder were placed under "kidney disease, etc."

(30) *Bowel diseases*, 2,035: (31) Inflammation of bowels, 433; (32) Diarrhea, 371; (33) Cholera infantum, 833; (34) Dysentery, 79; (35) Peritonitis, 83; (36) Bowel disease, etc., 236. Diarrhea includes 20 cases specified as chronic, and dysentery 2 cases so returned. Bowel disease, etc., comprises: Appendicitis, 10; abscess of bowels, 4; congestion of bowels, 5; constipation, 2; disease of bowels, 37; gangrene of bowels, 2; hemorrhage of bowels, 9; obstruction of bowels, 19; paralysis of bowels, 2; perforation of bowels, 2; rupture of bowels, 2; ulceration of bowels, 7; "cholera," 5; cholera morbus, 57; colic, 13; bilious colic, 1; dropsy of bowels, 4; fistula, 4; hernia, 43; piles, 1; typhlitis, 2; worms, 5.

Some of the cases of inflammation of the bowels, and many of those included in "bowel disease, etc." are diarrheal in character. The nature of the returns does not permit of any very exact distinctions being made between those included under different titles. Thus, of the 371 cases of death from diarrhea, no less than 248 were originally specified as "summer complaint," a recognized synonym for cholera infantum, while, on the contrary, many cases of ordinary diarrhea in infants were returned as "cholera infantum." These diseases are best studied in the aggregate, and according to their age incidence. For this purpose it is very important that distinction of ages below five years should be made. This has not yet been done in these reports, and hence we can only approach the subject by observing that 1,438 of the 2,035 total deaths from bowel diseases occurred in children under five years of age. This is equivalent to 70.7 per cent of the total, and does not include deaths of children from tubercular bowel diseases (specified as such) given above.

There was a large increase in the number of deaths returned from diseases of the bowels as compared with the preceding year. Inflammation of the bowels increased from 334 to 443, diarrhea from 277 to 371, and cholera infantum from 606 to 833. The total number of deaths recorded from diseases of the digestive organs (excluding those affecting the stomach and liver and also certain infectious diseases having this location, such as certain forms of tuberculosis, typhoid fever, and also excepting deaths from cancer of the viscera), 2,035, represents an increase of nearly 25 per cent over the deaths from this class of diseases in 1892, which were only 1,631. The meteorological records show that June was an unusually hot month, the average temperature being 69.05 degrees, or over 3 degrees above the average for the 15 years 1877-91 (65.74 degrees.) July and August were also exceptionally warm in 1893. The defects in the method of collection of statistics of deaths in Michigan preclude any attempt at a systematic comparison of mortality from this class of diseases and weather conditions by months or other subdivisions of the year, although their relations are undoubtedly very intimate. Certain diseases now included in this group, including many of those under diarrhea, dysentery, peritonitis and cholera infantum, are due to one or more micro-organisms, and hence have claims to be included in the specific infectious diseases.

* Many diseases in the following list, *e. g.*, cholera infantum, pneumonia, are now known to be caused by one or more species of bacteria, and will undoubtedly be added in time to the list of officially defined "dangerous communicable diseases."

(37) *Brain diseases*, 1,709: (38) Apoplexy, 240; (39) Congestion of brain, 79; (40) Inflammation of brain, 307; (41) Epilepsy, 66; (42) Meningitis, 172; (43) Paralysis, 662; (44) Brain disease, etc., 183. Meningitis includes spinal fever, 50; meningitis, 24; cerebral meningitis, 4; cerebro-spinal meningitis, 2; spinal meningitis 92. Paralysis includes progressive locomotor ataxia, 2; progressive muscular atrophy, 1; multiple sclerosis of nerves, 1; "creeping paralysis," 7; general paralysis, 15; sclerosis of spinal cord, 1; paralysis (unspecified forms), 635. Brain disease, etc., includes: Abscess of brain, 7; atrophy of brain, 1; compression of brain, 2; disease of brain, 52; embolus of brain, 1; paralysis of brain, 13; softening of brain, 42; thrombosis of brain, 1; chorea, 2; idiocy, 1; insanity, 60; insomnia, 1.

The number of deaths reported from various affections of the brain and central nervous system exceeded that recorded for any previous year of registration, although the death-rate from this group of causes of death, allowance being made for increase of population, has been several times exceeded. The increase over the previous year appears to be mostly from paralysis and meningitis.

(45) Cancer, 644; (46) Tumor, 156. Deaths from cancers and tumors are studied together because there is much confusion of the two terms in their ordinary use. Both show a marked increase over the previous year in the number returned. In Table 56 and Diagram II the course of cancer in Michigan may be examined for each year of registration, and its constant and regular increase in importance as a cause of death will be noted. The sinuous regularity of the curve and the absence of the fluctuations characteristic of the infectious diseases represented, are especially characteristic.

An increase in the mortality from cancer is generally indicated for recent years, not only in the Michigan reports but in those of other states and countries. It has been claimed that the large increase in the mortality from cancer is more apparent than real, and is due chiefly to more accurate diagnosis of cancers of inaccessible parts of the body.

In Table 61, on the opposite page, may be seen the distribution of deaths from cancers and tumors, by sex and according to the parts of the body affected, for the year 1893, and also, for cancers only, for the period of twenty-one years, 1872-92. Of the whole number of deaths reported from cancer in the 21 years, 42.8 per cent were males and 57.2 per cent females. Excluding from the total number of deaths of males all cases in which the organ affected was unspecified, we have 1,717 cases, of which 1,077, or 62.7 per cent were deaths from cancer of the stomach. Among females, the ratio of deaths from cancer of the stomach was less, being 39.8 per cent; 401 deaths, or 21.4 per cent were from cancer of the breast, and 282 deaths, or 15.0 per cent were from cancer of the uterus.

(47) Childbirth, 222. This number includes 8 deaths specified as caused by abortion or miscarriage; 2 from puerperal convulsions; 1, ectopic gestation; 1, puerperal mania; 1, phlegmasia dolens. There are also 42 deaths from puerperal fever not included here but classed under dangerous communicable diseases. The deaths returned from childbirth have remained very uniform for the years represented in Table 55, showing, as there has been a large increase in population in that time, that the death-rate has constantly diminished.

(48) Convulsions, 520. This is an indefinite term, merely expressive of the symptoms in deaths from certain causes. When specified as epileptic, puerperal or uræmic, they are classified elsewhere. Nearly nine-tenths (89.2 per cent) of the total number were deaths of children under five years of age.

CANCERS.

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Table 61.—Deaths returned from cancer in Michigan for the year 1893, and for the twenty-one years, 1872-92, inclusive, specifying the part of the body affected.

Cancer of—	Year 1893.			Twenty-one years, 1872-92.		
	Total.	Males.	Females.	Total.	Males.	Females.
All organs	644	284	360	7,808	3,128	4,180
Arm				6	3	3
Back				1	1	
Bladder	5	5		18	15	3
Bone	1	1		3	3	
Bowels	13	4	9	140	58	84
Brain				4	3	1
Breast	27		27	405	24	401
Ear				3	2	1
Eye				17	8	9
Face	18	12	6	208	154	54
Foot				4	4	
Gall bladder				1		1
Groin				4	3	1
Hand				5	4	1
Head	1	1		34	20	14
Heart	1		1	6	2	4
Hip				2	1	1
Jaw				4	4	
Kidney	2	1	1	8	6	2
Leg	2	1	1	19	13	6
Lip	1	1		3	3	
Liver	22	12	10	170	88	82
Lungs				19	9	10
Mouth	3	2	1	86	58	28
Neck	7	7		29	20	9
Nose				3	3	
Omentum				1		1
Ovaries	1		1	1		1
Esophagus				3	1	2
Pancreas	1		1	4	3	1
Pylorus	1	1				
Rectum	6	4	2	29	16	13
Shoulder				2	2	
Side				13	2	11
Spleen				1		1
Spine				5	2	3
Stomach	164	98	71	1,824	1,077	747
Throat	8	6	2	94	55	39
Thigh	1	1				
Testicles				3	3	
Tongue	5	5		23	12	11
Tonsils				1		1
Unspecified part	335	127	208	3,713	1,411	2,302
Urethra				1		1
Uterus	19		19	282		282

NOTE.—Deaths returned from "tumor" in Michigan, 1893.—There were 156 deaths, 43 males and 113 females, thus returned, many of which were probably deaths from cancer. Their distribution, by sex and organs affected, was as follows: Abdomen, 1 male, 2 females; back, 1 male, 1 female ("spider tumor"); bowels, 2 males, 5 females; bladder, 2 males; brain, 6 males, 2 females; breast, 1 female; face, 1 male; heart, 1 male; liver, 1 male, 3 females; neck, 2 males; ovary, 11 females; side, 2 males, 2 females; stomach, 4 males, 10 females; throat, 1 male; uterus, 4 females (2 specified as fibroids and one multiple fibroid); unspecified, 19 males, 72 females.

(49) Diabetes, 111. Deaths thus returned have usually been considered to be from diabetes mellitus, although rarely so specified. A marked increase is apparent in deaths from this cause over any previous year.

(50) Dropsy, 446. This is another indefinite return of cause of death which would be practically eliminated from registration reports under an efficient system of registration. In all cases of "dropsy," the disease responsible for that condition should be stated, whether cardiac, renal or other. Were the statements of causes of death based upon physicians' certificates, there would be hope for improvement in this respect, but under the present registration law these indefinite returns will continue to constitute a large percentage of total deaths.

(51) Fever, 100. This includes bilious fever, 9; catarrhal fever, 8; gastric fever, 6; fever, unspecified, 77. The deaths returned simply as "fever" may in some instances be enteric or other definite forms of fever. The absence of specification prevents proper classification. The other forms included are all of a somewhat indefinite or ambiguous character.

(52) Malarial fever, 122. Besides 97 cases so specified there were included 14 deaths from "congestive chills," 6 from intermittent and 5 from remittent fever. Malarial diseases have steadily diminished in Michigan for the period of time covered by Table 55. The deaths reported annually from this cause at present are about the same numerically as were returned twenty years ago when the State had only about one-half of its present population.

(53) *Heart diseases*, 1,429: (54) Pericarditis, 80; (55) Heart disease, etc., 996; (56) "Heart failure," 353. Pericarditis includes only one case returned as such, the remainder being returned as "dropsy of heart." Heart disease, etc., includes, besides 877 deaths returned simply as "heart disease," the following more definitely specified forms: Abscess of heart, 2; heart clot, 1; endocarditis, 1; fatty degeneration of heart, 13; hypertrophy of heart, 10; inflammation of heart, 4; malformation of heart, 1; myocarditis, 1; neuralgia of heart (angina pectoris), 31; palpitation of heart, 4; paralysis of heart, 33; rupture of heart, 1; valvular disease of heart, 17. It does not include 353 cases of "heart failure," which were separately stated this year as in 1891 and 1892. For preceding years, as shown in Table 55, these deaths were included in heart disease. They are generally equivalent to deaths with cause unspecified,—so returned either through ignorance or carelessness,—and probably imply no actual heart disease. For this reason the statistics of heart disease at present are not comparable with those of years antedating the common use of this pernicious term.

(57) Influenza, 555. Influenza continued to be reported during the year, although with greatly diminished intensity as compared with the years immediately preceding. Of the total number of deaths reported, 555, no less than 252 were in the last month of the year, from which it may be augured that a considerable death-rate from this disease will be reported for 1894. In Michigan there is an undoubted tendency, owing to the manner of collecting the data, for many deaths to be ascribed to "la grippe" that would be referred to other causes were the statements as to cause of death derived from death certificates issued by physicians. Every disease whose onset is attended with acute catarrhal symptoms is likely to be so returned, no matter what organs were ultimately involved. And many consumptives, whose deaths would have undoubtedly occurred during the past few years in the natural course of that disease, have been returned as dying from influenza, a cause that merely accelerated death. All of these considerations must be taken into account in studying the reported mortality in Michi-

gan from epidemic influenza, and especially in comparing the mortality in this State with that of other states and countries having more accurate systems of registration. The following table exhibits the deaths reported for each month of the past five years from this disease:

Deaths in Michigan from influenza ("la grippe"), by months, according to the returns for the years 1889-93.

Years.	Total for year.	Months.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.
1889.....	176	30	28	17	11	6	7	2	2	4	8	19	41	1
1890.....	1,084	174	210	154	133	79	60	44	53	36	46	37	56	2
1891.....	1,076	110	83	96	249	110	62	48	31	43	37	38	160	4
1892.....	907	351	209	99	58	35	24	18	19	17	19	30	28	---
1893.....	555	43	41	28	26	33	20	14	15	20	24	39	252	---

(58) *Kidney diseases*, 479: (59) Inflammation of kidneys, 375; (60) Kidney disease, etc., 104. Inflammation of kidneys includes 351 cases specified as Bright's disease, 1 as congestion of kidneys, and 23 as such. Under kidney disease, etc., are 91 deaths so returned; 3 from abscess; 1, hemorrhage of kidneys; 7, uræmia, and 2 from suppression of urine. Kidney diseases appear to be increasing in this State during the period of years covered by Table 55. This may be, as has been observed elsewhere, on account of better diagnosis, and also, in part, from changes in fashion in medical nomenclature. Many deaths that would have been returned simply as "dropsy" in former years would at present be ascribed to some form of Bright's disease.

(61) *Liver disease, etc.*, 166. The returns under this head do not suggest much accuracy of statement as a rule, and are probably little to be relied upon. They include, besides 69 deaths from disease of liver of unspecified character (frequently returned as "liver complaint," "liver trouble," etc.), the following more definitely specified forms of hepatic affections: Dropsy of liver, 3; disease of gall, 3; obstruction of gall-duct, 1; gall-stone, 11; jaundice, 23; infantile jaundice, 1; abscess of liver, 17; atrophy of liver, 1; cirrhosis of liver, 7; congestion of liver, 9; enlargement of liver, 6; hemorrhage of liver, 1; inflammation of liver, 14.

(62) *Lung diseases (not including consumption)*, 1,866: (63) Asthma, 79; (64) Bronchitis, 182; (65) Pleurisy, 28; (66) Pneumonia, 1,385; (67) Congestion of lungs, 77; (68) Lung disease, etc., 115. Among the 182 deaths from bronchitis are 8 returned as chronic bronchitis. Pleurisy includes 2 deaths from empyema. Pneumonia includes 5 from pleuro-pneumonia; 48 from typhoid pneumonia, and 1 from capillary bronchitis. Under "lung disease, etc.," are 71 returned as lung disease; 34 from hemorrhage of lungs (both of these terms imply tuberculosis in the majority of cases); 7 from abscess of lungs; 2 from oedema of lungs; 1 from gangrene of lungs. Congestion of lungs is stated separately for the years 1891-93 because, in the opinion of the compiler, it is

merely a local expression for pneumonia in the majority of cases. In previous years deaths so returned were included in "lung disease," which term, likewise, is a common localism for consumption.

The most important of the causes of death included in this group is pneumonia. The course of this disease in Michigan may be traced through previous years of registration by referring to Table 56 and the diagram on the opposite page (Diagram II), which graphically represents the same figures. From these it appears that this disease has been more than usually prevalent during the last few years, and if the deaths immediately caused by pneumonia, but returned from influenza, could be added, it is probable that the death-rate from this disease would reach an unprecedented height. Pneumonia is an infectious disease, although this fact is not at present recognized by public opinion nor are there any restrictive measures practiced or recommended by the public health service—except, perhaps, the following general directions as to the disposal of sputa contained in the leaflet prepared by the State Board of Health for the benefit of consumptives, but which are equally applicable to persons ill with pneumonia:

"It is best that all persons who have a *cough* should carry small pieces of cloth (each just large enough to properly receive one sputum) and paraffined paper envelopes or wrappers in which the cloth, as soon as once used, may be put and securely enclosed, and, with its envelope, burned on the first opportunity.

"Remember that sputa must never be allowed to become dry."

The following statements from Osler* bearing on the infectious character of the disease will be of interest: "A change of opinion has of late taken place as to the nature of pneumonia, which is now almost universally regarded as a specific infectious disease, depending upon a micro-organism. Among general circumstances favoring this view, is the occurrence of pneumonia in *epidemic form*, a fact recognized by Laennec and by Grisolle. Many house epidemics have been described within the past twenty years. On several occasions I have known two, three or even four persons admitted to hospital from the same house. . . . The *diplococcus pneumoniae* of Fränkel is the most constant organism in lobar pneumonia and is now believed by many competent authorities to be the cause of the disease. . . . According to the dominant view, pneumonia is an infective disease caused by this diplococcus, which has its seat of election in and produces its chief effects on the lung, and which can, under favorable circumstances, invade other parts of the body—the pleura, meninges and endocardium. This microbe may possibly attack these parts without the intervention of inflammation of the lung, as it has been found in meningitis and pleurisy independent of pneumonia. It is a wide-spread organism, at times present, in the buccal secretions of healthy persons. It is not improbable that the various predisposing causes, such as cold, exhaustion and debility, lower the vitality and render the individual susceptible, thus changing the character of the tissue-soil so that the virus can grow and produce its specific effects." It should be remembered that the returns in Michigan make no distinction between deaths from lobar and broncho-pneumonia, to the former of which only the above remarks directly apply.

(69) Rheumatism, 141. Included in this number are rheumatism of heart, 30; inflammatory rheumatism, 24; sciatica, 7; lumbago, 1; besides 79 deaths simply returned as such. While rheumatism is of great importance as a cause of sickness in Michigan, it is of less interest as a cause of mortality.

(70) Septicæmia, 177. This represents an indefinite form of return, the majority of the cases being reported as "blood poisoning." Whether after wounds or injuries or

* Practice of Medicine, 1892, pp. 512-513.

after parturition is not specified except in a few cases which have been included under the proper heads. In the early reports deaths from septicæmia were classed with deaths from erysipelas under the latter title, which fact should be borne in mind in consulting them.

(71) Spine disease, etc., 105. Another indefinite return, it being uncertain whether disease of the spinal cord or of the vertebræ is intended. It includes 1 death from abscess of spine; 3 from inflammation of spine, and 2 from paralysis of spine, besides 99 deaths returned from spinal disease of unspecified character.

(72) *Stomach diseases*, 233: (73) Inflammation of stomach, 64; (74) Stomach disease, etc., 169. The latter term includes, besides 74 deaths from "stomach disease," 16 from dyspepsia; 32 from indigestion; 3 from stricture; 8 from abscess; 6 from congestion; 3 from "consumption;" 4 from hæmetémesis; 9 from neuralgia; 11 from ulcer; 1 from dropsy; 1 from paralysis; and 1 from rupture of stomach.

(75) Syphilis, 21. Deaths from this disease are probably not fully reported in Michigan. This has been the experience of countries where the registration of causes of death is far more precise than in this State, and it is not likely that our statistics, collected as they are from the friends and relatives of decedents, would show even the approximate number of deaths from this cause. It would seem certain, however, that many deaths of children in cities, and many cases of still-births are the results of syphilitic infection.

(76) Unclassified, 1,580. Under this head may be found the deaths from diseases of an indefinite character or of small importance numerically. They are as follows:—Abscess (part unspecified), 62; abscess of pelvis, 4; anæmia, 4; aneurism, 1; disease of arteries, 1; atrophy, 1; black vomit, 1; prolonged birth (child), 1; "consumption of blood," 5; disease of blood, 1; rupture of blood vessel, 6; canker, 14; carbuncle, 7; catarrh, 10; chlorosis, 2; cold, 11; coma, 2; congestion, 10; cough, 2; cyanosis, 2; debility, 183; nervous debility, 39; dropsy of throat, 1; disease of ear, 1; eczema, 11; inflammation of eye, 1; gangrene, 26; exophthalmic goitre, 1; disease of head, 2; hemorrhage, 25; hic-cough, 2; hydrophobia, 3; inanition, 57; infantile, 3; inflammation, 56; intemperance, 19; disease of joint, 1; laryngitis, 5; malformation, 7; malnutrition, 2; mumps, 5; necrosis, 3; disease of nerves, 1; neuralgia, 19; neuritis, 1; old age, 750; mastoid osteitis, 1; disease of ovaries, 2; pharyngitis, 1; phlebitis, 3; psoriasis, 1; rachitis, 2; salpingitis, 9; scalled head, 1; spina bifida, 3; disease of spleen, 2; stricture, 1; disease of suprarenal capsule, 3; syncope, 2; teething, 58; tetanus, 7; tetter, 1; disease of throat, 6; inflammation of throat, 4; paralysis of throat, 2; thrombosis of leg, 2; thrush, 3; tonsillitis, 25; turn of life, 3; stricture of urethra, 1; disease of urinary organs, 3; abscess of uterus, 1; disease of uterus, 4; inflammation of uterus, 5; vomiting, 2; unspecified or ill-defined deaths from disease, 51.

The decrease in the number of deaths reported from unclassified diseases as compared with the preceding year, is chiefly made of a diminution in the numbers reported from "old age" and "debility." There were only 750 of the former indefinite form of return made in 1893 as against 1,079 for the year 1892. This is satisfactory, since it indicates greater care in specifying the cause of death.

The number of deaths not classified in Table 55 bears about the same proportion to total deaths except for the six years, 1884-89, inclusive. The reason for their increase in these years is due to an eccentricity in methods of compilation explained in the Report for 1891 (page 190): deaths of old persons and of infants returned in those years with the causes unspecified were compiled as "old age" and "infantile," thus increasing

the number of deaths in the class of Developmental Diseases, and showing an *apparent* improvement in accuracy of registration. Such improvement was entirely illusory, as comparison was made with previous years in which deaths from unspecified causes were compiled as "unknown."

DEATHS FROM VIOLENCE IN MICHIGAN, 1893.

The category of deaths from violent causes comprises three general heads: (1) deaths from accidental injuries; (2) suicides, and (3) deaths caused by homicidal violence. All deaths returned simply as due to drowning, poison, etc., the circumstances attending being otherwise unspecified, are presumed to be accidental. Doubtless a few suicidal cases are thus included. Under "homicide" most of the instances are returned as "murder." The statements given in the returns are not sufficiently definite to determine the legal character of the crime involved, and accordingly all are grouped under the general term.

Table 62.—Deaths from violence in Michigan in 1893, causes specified.

Manner of death.	Number.	Manner of death.	Number.
TOTAL NUMBER OF DEATHS FROM VIOLENT CAUSES	1,175	All other casualties.—Continued.	
I.—ACCIDENTAL.....	1,050	Outdoor employments, injuries in.....	21
II.—SUICIDAL.....	109	Scalding.....	16
III.—HOMICIDAL.....	16	Surgical operation.....	37
		Miscellaneous and unspecified.....	202
I.—ACCIDENTAL.....	1,050	II.—SUICIDAL.....	109
Burning.....	73	Cutting throat.....	2
Drowning.....	185	Drowning.....	9
Heat and sunstroke.....	11	Hanging.....	16
Gunshot.....	53	Poison.....	14
Lightning.....	4	Carbolic acid.....	4
Mining accidents.....	71	Laudanum.....	1
Poison (not stated as suicidal).....	28	Morphine.....	1
Railroad accidents and injuries.....	97	Paris green.....	3
Vehicles and horses.....	52	Strychnine.....	1
<i>All other casualties</i>	476	Unspecified.....	4
Animals other than horses.....	3	Shooting.....	17
Asphyxia.....	37	Wounding abdomen.....	1
Birth, injury at.....	13	Unspecified.....	50
Electricity.....	7	III.—HOMICIDAL.....	16
Exposure.....	13	"Compulsory suicide".....	1
Fall.....	49	Drowned by mother.....	1
Falling tree.....	24	Infanticide.....	2
Fractures.....	34	Poisoned by mother.....	1
Freezing.....	6	Stabbed.....	2
Machinery in mills, etc., injuries from.....	14	"Murdered by husband".....	1
		"Murdered"—not further specified.....	8

Table 63.—Deaths from violence in Michigan in 1893, by counties.

State and counties.	Total deaths from violence, 1893.	I.—Accidents.											II.—Suicides.	III.—Homicides.
		Total.	Burning.	Drowning.	Gunshot.	Heat and sun-stroke.	Lightning.	Mining.	Poison.	Railroad.	Vehicles, etc.	All others.		
State	1,175	1,050	73	185	53	11	4	71	28	97	52	476	109	16
Alcona	4	4	1	1								2		
Alger														
Allegan	22	18	2	4	3	1					2	6	4	
Alpena	7	7		4						1		2		
Antrim	4	4					1			1	1	1		
Arenac	2	2		1						1				
Baraga	2	1		1										1
Barry	8	6		2	1	1						2	2	
Bay	42	39	1	12		1			1	6	2	16	3	
Benzie	4	3										3		1
Berrien	15	13		3	1					4		5	2	
Branch	8	6		1					1			4	2	
Calhoun	21	16					1			3	2	10	5	
Cass	7	6			1					1	1	3	1	
Charlevoix	7	7		2								5		
Cheboygan	4	4		1					1	1		1		
Chippewa	5	5		3	1							1		
Clare	3	3								1		2		
Clinton	8	4							1		1	2	4	
Crawford	1	1										1		
Delta	9	9		1	1					1		6		
Dickinson	21	20	1					5		1		13	1	
Eaton	12	9							1	3		5	3	
Emmet	1	1	1											
Genesee	20	19	1	2	1	1				2		12	1	
Gladwin	5	5	1	1					1			2		
Gogebic	12	12	1		1			6		2		2		
Grand Traverse	18	12			1					2	2	7	1	
Gratiot	4	2										2	1	1
Hillsdale	11	11	2	1						2	1	5		
Houghton	46	43	3	9	1	1		20		1		8	2	1
Huron	12	11		1					1		1	8	1	
Ingham	20	14	2	2	1				1	2	1	5	4	2
Ionia	12	12	1	3						2		6		

[illegible]

Table 63.—CONCLUDED.—Deaths from violence in Michigan in 1893, by counties.

Counties.	Total deaths from violence, 1893.	I.—Accidents.										II.—Suicides.	III.—Homicides.	
		Total.	Burning.	Drowning.	Gunshot.	Heat and sun-stroke.	Lightning.	Mining.	Poison.	Railroad.	Vehicles, etc.			All others.
Otsego	3	3		1						1		1		
Ottawa	15	13		2	1						1	9	2	
Presque Isle	3	2			1							1	1	
Roscommon														
Saginaw	46	45	6	10	1				1	5	3	19	1	
Sanilac	12	10		2	1					1	1	5	2	
Schoolcraft	5	5		2						1		2		
Shiawassee	10	8						1	2	3		2	1	1
St. Clair	28	27	2	13							5	7	1	
St. Joseph	12	10	1	1			1		1	3	2	1	2	
Tuscola	11	9	3	2	1							3	2	
Van Buren	11	10								1		9	1	
Washtenaw	22	20	1	5	1					3		10	2	
Wayne	170	158	17	24	10	2			3	14	7	81	9	3
Wexford	6	5		3					1			1	1	

In Table 66 may be found a statement of the number of deaths reported from each of these classes by sex, months of death, and periods of age of decedents, and also, under the general heading "accidental," the numbers returned from the chief causes of accidental death, namely, burning, drowning, heat and sunstroke, gunshot-wounds, lightning, mining accidents, poison, railroad accidents and injuries from horses and vehicles. The numbers returned for several preceding years of registration are also shown in connection with those for 1893, for convenient reference and comparison.

Table 62 (page 182) presents a detailed statement of the total number of deaths in the State in 1893 from these causes, and from certain minor causes included in one group under the heading "all other casualties" in the table. The distribution of the principal causes of violent deaths is given for the counties of the State in Table 63, and Tables 64 and 65, following, present certain data relative to suicidal deaths in Michigan for the year 1893, and for the period of twenty years extending from 1874 to 1893, inclusive.

I.—ACCIDENTAL DEATHS, 1893.

Of the 1,050 deaths from accidental injuries in 1893, a large majority, 846, were males; 204 were females. The preponderance of males exists in all the modes of injury shown in Table 66, except in the case of deaths from burning, lightning and from poison, in which the proportion of the sexes is more nearly equal. The number of deaths reported from violent causes shows little variation from year to year, the regularity being greater than in the case of deaths from disease. For the present year the chief casualties

were recorded under the heads of mining and railroad accidents. The mortality from the latter class was much less than might naturally have been expected, taking into consideration the immensely increased volume of passenger business on Michigan roads from the World's Fair, and would have been unprecedentedly low but for two accidents occurring close together in point of time and place (Jackson, October 13, 1893—14 killed; Nichols, October 20, 1893—28 killed).

Burning.—Of the 73 deaths from burning in 1893, 8, all females, were stated to have occurred from the explosion of gasoline. It should be remembered, should any use be made of these statements, that not all the deaths that actually occurred in the State from this or any other cause were returned by the enumerators, and that in but a small proportion of those returned were the particulars relating to the manner of the accident definitely specified. In addition to the number of deaths from burning there were 16 deaths from scalding, included under miscellaneous casualties. These should be added to give the total deaths from burning and scalding, 89, for comparison with previous reports.

The 10 deaths reported from this cause in Missaukee county were caused by a forest fire, which surrounded a lumber camp near Lake City on May 20, 1893, while the men, sixty in number, were at dinner. According to the newspaper account eleven (not ten as reported officially) perished; eight of these being suffocated in a well into which they had descended to escape the flames.

Drowning.—Of the 185 deaths from accidental drowning reported in 1893, 121 were from counties bordering upon the Great Lakes. Many of the deaths in these counties were drownings that occurred in rivers or inland lakes; the number of deaths due to disasters to shipping in Michigan waters cannot be learned from the registration returns. With a coast-line of over 1,600 miles, Michigan is peculiarly interested in the navigation of the lakes, and many of the deaths caused by wrecks and accidents to shipping, occurring within her waters, are properly included in the vital statistics of the State.

The following statement of wrecks and lives lost in Michigan waters is from the Report of the Weather Bureau of the Department of Agriculture, and covers the year as far as November 15 only. In this time there were 35 lives lost on or near the coast of Michigan, as follows:

LAKE SUPERIOR.—Schooner *Annie Sherwood* became water-logged and broke away from her towing steamer on account of heavy northwest gale, October 14, 1893; she was abandoned by her crew next day about 10 miles southwest of Caribou Island; eight days later the relief expedition found her ashore nearly due north on the coast of Ontario. Two lives were lost.

LAKE MICHIGAN.—Schooner *Minnehaha*, after becoming water-logged, stranded through stress of weather and became a total loss October 14, 1893; the wind was blowing almost a hurricane from the north. Six lives were lost. This wreck occurred near Manistee.

LAKE HURON.—Schooner *Newell A. Eddy* foundered in a very heavy northeast gale and blinding snow, and became a total loss April 20, 1893. This fine schooner parted her towline and was never heard of afterward. Considerable of her wreckage, such as cabin fixtures, was found after the gale subsided. The crew, consisting of seven persons, went down with the vessel. Careful search was made for the crew and vessel, but nothing but wreckage was found. The vessel was supposed to have foundered between Bois Blanc Island and Spectacle Reef.

Schooner *Coriscan* foundered, through collision, in foggy weather and became a total loss June 2, 1893. The crew consisting of six persons went down with the vessel. The collision occurred about 3:30 a. m. in a dense fog. This wreck occurred near Alpena.

Steamer *Philadelphia* foundered, through collision with the steamer *Albany* and became a total loss November 7, 1893. The *Philadelphia* took the *Albany* (which was seriously damaged, and whose crew was transferred to the *Philadelphia*) in tow and endeavored to tow her into shallow water, but the effort was fruitless, and with the entire crew of the *Albany* on board started for Sand Beach. It was shortly discovered that her collision bulkhead had given away and she was making water fast, and it would be impossible to reach a place of safety before she would go down. The crews of the two steamers then took to the *Philadelphia's* two boats. The boat which left the *Philadelphia* first was in charge of the first mate of the *Philadelphia*, the other being in charge of the captain of the *Philadelphia*, and leaving some minutes later. The boats became separated, and the one in charge of the captain reached Point aux Barques early in the morning, when the life-saving crew there immediately put out into the lake to endeavor to find the other boat. They found the boat upturned and recovered some bodies with life preservers on. The rest of the drowned have never been recovered, and the cause of the loss of the boat has never been brought to light, although every effort has been made to find the solution of the matter. Sixteen lives were lost.

Mining accidents.—Mining accidents were responsible for 71 deaths in 1893, according to the returns. They were distributed as shown in Table 63: 27 in Iron county; 20 in Houghton county; 12 in Marquette county; 6 in Gogebic county; 5 in Dickinson county; and 1 in Shiawassee county, the latter probably a case injured in some other part of the State.

As is true of all classes of returns, the full number of deaths that occurred from mining accidents was not enumerated. This fact appears prominently in making comparison of the deaths reported from mining accidents under the State registration as given above, and the mining inspectors' reports. According to these, as presented in the Report of the Commissioner of Mineral Statistics for 1892-93, there were the following deaths for the year ending September 30, 1893, in the several mining counties from accidents in mines: Gogebic, 13; Marquette, 18; Dickinson, 14; Houghton, 20. There were no fatal accidents in Keweenaw county (only 380 men employed), and no report was received from Iron county. The total number of fatal accidents thus reported for the year ending September 30, 1893, was 65; the total for the calendar year 1893 was probably somewhat less, as more men were employed in the last three months of 1892 than in 1893.

A remarkable casualty occurred at the Calumet and Hecla mine, Houghton county, on May 14, 1893, when ten men were precipitated a distance of 3,000 feet in the cage in which they were leaving work. The indicator of the hoisting engine was reported to be defective, for which reason the engineer in charge failed to check the ascent of the cage when it had reached the top of the shaft; the cage struck a beam across the top of the shaft, the wire rope snapped, and cage and men fell to the bottom.

The most serious disaster of the year, and, it is believed, as regards the number of lives lost, the greatest disaster that has occurred in the Lake Superior mining region was the flooding of the Mansfield mine, situated near Crystal Falls, Iron county, by the Michigamme river, on the night of September 28, 1893. Out of 46 miners employed in the mine, only 18 escaped, 28 being drowned. No report for 1893 could be obtained from the Mining Inspector of Iron county, nor was the State Commissioner of Mineral Statistics more successful in obtaining a report for publication in his Annual Report. In default thereof, the following graphic account of the disaster is taken from the telegraphic report to the Detroit Tribune of September 30, 1893:

The Michigamme river broke through the roof of the Mansfield mine near Crystal Falls between 9 and 10 o'clock last night and twenty-eight men were drowned like rats in a trap.

The mine is situated on the banks of the Michigamme river, six miles east of Crystal Falls, the county seat of Iron county. It has been working between three and four years and has shipped about 60,000 tons of Bessemer ore. The ore lenses dipped rapidly beneath the stream; for more than two years the chief workings have been directly under the bed of the river. There has been much trouble with the water, and predictions have not been wanting that the river would some day break through the roof of the mine.

The night shift had gone down last night and though some one noticed that the river seemed to be making more water than usual no special alarm was felt, as the pumps seemed to be able to keep the drifts free, so the work went on as usual until after nine o'clock. Then there came a distant roar and a rush of water. So fast came the flood that it is doubtful if the men in the upper levels were able to reach the shaft at all. The scenes of horror and death in the upper levels can only be imagined for no one escaped to tell the tale. Had the men been able to reach the shaft death would still have been certain, for the old or No. 1 shaft, the only direct means of reaching the upper levels, collapsed and caved about 9:30 cutting off all escape that way. Had there been any time the men might have descended by some winze to the lower levels and crossed over to No. 2 shaft, but the rushing flood came too fast. There was a wild cry of alarm through the little hamlet about the mine. Men, women and children gathered with horror-drawn faces to see eighteen men come forth from the hideous depths and to behold the Michigamme river plunging with a sullen roar into the chasm of its bed. There was no lack of volunteers to descend the only available shaft, but the self-sacrificing courage of the hardy miners was all in vain. The dark and sullen waters rising rapidly in the shaft proved even to the courage of despair that human aid was without avail here. * * * Not until after daylight did the river complete its work and resume its normal course. * * * The death of twenty-eight men marked the end of the Mansfield mine for unless the river be forced to seek another channel this rich deposit of iron ore can never be worked again. * * * It is believed that the disaster was caused by "robbing" the mine, that is by working in a reckless manner and tearing down pillars of ore in the upper levels that should have been left to support the roof.

Poison.—All cases of poisoning are included under accidental deaths in which the agent was not stated in the returns to have been administered with suicidal intent. Of the 28 deaths from this cause in 1893, 7 were children under 5 years of age. Of the children under 5 years, one each died from the following poisons: Overdose of morphine, eating sulphur (phosphorus) from matches, carbolic acid, anæsthetic for operation, eating berries. One child aged between 10 and 15 years, died from the effects of chloroform; two children under 5 years, one 5 to 10, and one 10 to 15, died from poisoning of unspecified character. The nature of the poison was not stated in 8 of the 18 deaths of adults; 1 death occurred from lead; 6 from morphine; 1 from chloral; 1 from chloroform; and 1 from prussic acid. The latter case was that of a guard at the State prison at Jackson, to whom poison was administered by a convict for the purpose of facilitating his attempt at escape. The case is compiled among the number of accidental deaths in accordance with the necessary rule of compilation previously stated, which assumes all deaths reported from violence to have been accidental in character, unless specifically stated to have been otherwise.

Railroad accidents.—According to the registration returns, there were only 97 deaths from injuries received on railroads in Michigan in 1893. This number is much less than that reported to Hon. S. R. Billings, Commissioner of Railroads, for the year, and published in his twenty-second Annual Report. Of the greater accuracy of the Commissioner's figures there can be no question, and in addition to the larger number reported (200), as compared with the registration returns, many valuable particulars are given in regard to the manner in which the injuries were received, connection of the persons injured with the roads as employés or passengers, etc., and degree of negligence or carelessness concerned. The following statements are made upon the authority of the Railroad Commissioner's Report:

Deaths and injuries on railroads in Michigan in 1892 and 1893.

Manner of accident.	Killed, 1893.				Injured, 1893.				1892.	
	Passengers.	Employés.	Others.	Total.	Passengers.	Employés.	Others.	Total.	Killed.	Injured.
Collisions	45	7	—	52	107	20	2	129	2	15
Coupling cars	—	14	—	14	—	157	3	160	17	223
Derailments	—	3	—	3	—	13	—	21	—	24
Falling from trains	—	13	1	14	—	26	—	29	25	34
Frogs	—	—	—	—	—	1	—	1	—	—
Getting on and off trains	1	7	—	8	7	15	5	30	10	45
At highway crossings	—	—	20	20	—	—	14	14	8	23
Miscellaneous causes	—	14	3	17	2	123	3	128	30	181
Overhead obstructions	—	—	—	—	—	2	—	2	—	—
Trespassers on trains	—	—	6	6	—	—	14	14	9	25
Trespassers on tracks	—	—	66	66	—	2	36	38	66	49
Total	46	58	96	200	127	362	77	566	167	619

"The reports of the railroad companies show the total number of accidents in this State for the year 1893 to be 766, a decrease of 20 from the figures of the preceding year. Computed upon a mileage basis, the average is one accident for each 51,375 miles run in Michigan, and one for each 23,181 passengers carried in this State. The total number of fatal accidents reported is 200, an increase of 33 over the previous year. The large increase in the number of fatal accidents is accounted for by the accidents that occurred at Jackson, on the Michigan Central, resulting in 14 killed and 70 injured, and the accident at Nichols, on the Chicago & Grand Trunk, resulting in 28 killed and 26 injured, making the casualties at these two places 96 injured and 42 killed, a total of 138, or 18 per cent of the total for the year. The number killed averages 21 per cent of the entire number killed in the State for the year."

The facts relating to the casualties attended with the greatest loss of life are thus stated by the Commissioner of Railroads in a special report to the Governor under date of November 24, 1893. Besides the collisions at Jackson and Battle Creek, a collision at Bellevue on the Chicago & Grand Trunk Railway, on September 27, causing 2 deaths, and an accident caused by the sinking of the track of the Toledo, Ann Arbor and Northern Railway, near Hamburg, on October 25, by which 3 trainmen were killed, are included in the Commissioner's report.

During thirty days succeeding September 27, 1893, there occurred four railroad accidents of appalling severity within a radius of 50 miles from the capital of Michigan. These accidents involved total casualties as follows: 47 killed or died from injuries, and 54 more or less seriously injured.

In view of this unprecedented record, I have deemed it necessary to make a special report to you of the facts in each case as resulting from investigations made.

COLLISION ON THE MICHIGAN CENTRAL RAILROAD AT JACKSON—14 DEATHS.

This accident occurred on the morning of October 13. It was a rear collision. Both were World's Fair specials, bound west, and by special handling by train dispatchers, all trains were kept at least one station apart, except at Jackson and Michigan City, which are division terminals. At these points electric semaphore signals are erected about 1,000 feet from station, to protect trains standing in station limits.

It was shown that this accident was due to failure of the air brakes on second special, and this failure, after due investigation, has been attributed to one of two conditions: First, it was shown that the angle cock at the rear of tender on this train was found closed after the collision; also that a man was seen to get on front platform at Ypsilanti, and was also seen at Jackson just before collision in same place. It was also shown the conductor could make no application of the brakes by use of conductor's valve in the coaches. It was then shown that the triple valves on engine and train were found, immediately after the accident, in an applied position. Also that the brakes were in perfect working order at Ypsilanti, and that engineer of this train had used the brakes at his command to slow up his train at Ann Arbor and Dexter, and to reduce the speed of his train from at least 50 miles per hour to 30 miles per hour in about 2500 feet at east end of Jackson yard.

I therefore conclude that, either the angle cock above described was closed, thereby depriving the engineer of the control of the brakes behind the closed cock; or, that there was not sufficient air pressure on entire train to make but one effective application in making reduction of speed above referred to.

COLLISION ON CHICAGO & GRAND TRUNK RAILWAY NEAR BATTLE CREEK—28 DEATHS.

This accident, the most disastrous in the railroad history of Michigan in loss of life and serious injury to passengers, occurred on the morning of October 20, at Nichols, about one mile east of Battle Creek, and 1,300 feet east of the end of double track. It was a head collision between regular passenger trains Nos. 6 and 9, and resulted from disobedience of orders to meet on double track, by conductor and engineer

of train No. 6. The horror of the accident culminated in the wreck taking fire, probably from the Baker Heater in coach No. 1300, and nearly all the occupants of the ill-fated coach were burned beyond recognition.

This department has issued a circular order to general managers and superintendents, looking to improvement in strength and safety of this class of heaters for coaches; also to adopt some form of fire extinguishers for immediate use in such cases.

In concluding this report, I can but allude to the fact that up to the 27th of September in the handling of the enormous traffic of the Columbian Exposition scarcely a casualty had been reported to this office. A fact which reflected great credit to the railway officials in charge, to whom the responsibility of the accidents named above cannot be charged, and the reaction occasioned by these disasters is severe and deplorable.

According to Table 63 there were 6 deaths in Jackson county from railroad accidents and casualties during the year, and 3 deaths in Calhoun county. Examination of the deaths so returned shows that none of them, with the exception of one death in Jackson county, were the victims of these two horrible collisions. A more striking picture of the worthlessness of the present State registration law can hardly be given. Here are 42 persons killed in the heart of the oldest and most intelligent portion of the State. Coming so close together, within a week of each other, these accidents sent a thrill of horror over the entire State and country. And yet the returns of deaths from the counties in which they occurred, collected by the supervisors some six months thereafter, contain but a single mention of the occurrence—*one death properly returned out of forty-two that actually occurred*. Legal evidence of the death of some one or more of these persons may at some time be necessary for the benefit of their children or other heirs. It may be that proper records have been kept in the offices of local registration at Jackson and Battle Creek, or preserved by the coroners who investigated the causes of the accidents. So far as the State is concerned, however, not a scrap or vestige of the facts necessary for identification can be found in her official records—the books that should contain a transcript of the facts relative to every death that occurs in the State.

Out of the total number of accidents that occurred in the State during 1893 (766), "202 are clearly accidental, the remaining 564 resulting from negligence, lack of caution and the persistent habit of trespassing upon tracks and trains; 114 trespassers or tramps, 8 intoxicated people, and 2 suicides were killed or injured."

The following table shows the number of passengers, employés and other persons killed and injured for the past 11 years, and also states the total death and injury rates per 1,000,000 passengers carried. The showing for the World's Fair year, 1893, is especially remarkable, the rates being lower than for any previous year. "The World's Fair travel made extraordinary demands upon railway resources, as well as upon the intelligence, skill and energy of those responsible for railway management, and undoubtedly swelled the number of accidents to both passengers and employés. A competent railway manager is credited with the suggestion that many accidents are probably due to overcaution; that the constant warning of employés of the necessity for care and precaution may so affect their efficiency that a railway manager frequently hesitates to speak to employés by way of caution, to avoid the danger of confusing them. Considering the responsibility upon all of those charged with duties on a passenger train, loaded to its utmost capacity, running outside of regular schedule time, conscious that the tracks are crowded with other trains, the coolness, skill and intelligence of the railroad employé challenge public admiration:"*

* Seventh Annual Report U. S. Interstate Commerce Commission, p. 76.

Passengers carried, deaths and injuries on railroads in Michigan, 1883-93.

Year.	Number of passengers carried.	Number of passengers.		Number of employés.		Number of others.		Total number.		Rate per 1,000,000 passengers carried.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1883	25,312,275	15	54	62	289	86	73	163	416	6.4	16.4
1884	24,782,322	5	31	29	294	68	68	102	393	4.1	15.9
1885	22,970,564	7	29	45	229	71	58	123	316	5.4	13.8
1886	24,697,065	2	38	47	194	77	79	126	311	5.1	12.6
1887	24,057,719	2	32	62	251	78	87	142	370	5.9	15.4
1888	27,436,106	7	21	63	256	90	88	160	365	5.8	13.3
1889	31,136,050	8	26	60	282	110	86	178	394	5.7	12.7
1890	33,503,059	7	53	75	491	150	93	232	637	6.9	19.0
1891	34,208,271	5	47	52	355	118	112	175	514	5.6	15.0
1892	40,355,149	6	45	73	463	88	111	167	619	4.1	15.3
1893	53,916,095	46	127	58	362	96	77	200	566	3.7	10.5

The following table showing the death-rates and injury-rates per 1,000,000 passengers carried will be of interest as compared with the rates for Michigan. "The figures are calculated over a series of years and brought down to the latest available dates," but, as noted by the authority from whom they are taken, T. A. Coghlan, Government Statistician of New South Wales, "the mode of comparison by passengers carried is not a perfect one, as the question of distance traveled by each passenger is an important element of the risk run, and is omitted from consideration."*

Persons killed and injured per 1,000,000 passengers carried on the railroads of certain countries.

Countries.	Average per 1,000,000 passengers carried.		Countries.	Average per 1,000,000 passengers carried.	
	Killed.	Injured.		Killed.	Injured.
Germany	0.1	0.4	United Kingdom	0.2	1.8
Austria-Hungary	0.1	1.1	Portugal	0.4	4.1
Belgium	0.1	1.2	Spain	0.9	3.8
Sweden	0.2	0.2	Canada	17.2	64.8
France	0.2	1.1	India	6.0	10.4
Italy	0.2	1.8	New South Wales	0.4	2.5
Norway	0.1	0.1	Victoria	0.1	1.8
Holland	0.1	0.2	South Australia	0.2	0.6
Switzerland	0.2	0.7	New Zealand	0.7	2.3
Russia	0.8	2.5			

* The Wealth and Progress of New South Wales, 1893, p. 279.

Injuries from Horses and Vehicles.—There were 52 deaths reported from this class of violent deaths, 43 males and 9 females. Fifteen males and 1 female were injured directly by horses, of whom 11 were stated to have been kicked; 12 males were killed in runaways; 7 males and 1 female by falls from wagons or horses; 4 males and 3 females were run over by wagons or carriages; 4 males and 3 females were killed by street cars, 3 of these being males under 5 years; 1 girl under 5 years was killed by the breaking of a whiffle-tree; 1 male over 80 years of age was fatally injured by a bicycle.

Miscellaneous Casualties.—Deaths from all other forms of violent injury numbered 476, the principal varieties of which are stated in Table 62. There were 3 persons killed by *animals* other than horses, namely, 1 by a dog (not reported as hydrophobia), 1 by a cow and 1 by a bull. Of the 37 deaths reported from *asphyxia*, 11 were given as strangulation, 8 as choking (not further specified), 3 suffocated, 3 smothered, 2 asphyxiated by gas, 2 asphyxia, 2 smothered in ditch, and 1 each by choking from corn, cinnamon stick, bean, piece of potato, peanut shell and foreign body in air passages. Thirteen infants died from *injuries received at birth*, in only one case of which instruments were stated to have been used. *Electricity* caused 7 deaths, not including 4 deaths from lightning. No deaths from explosions of boilers were recorded for 1893. There were 13 deaths from *exposure*, all merely reported as such except in one case, "exhaustion from exposure to cold while gunning." To this number some of the 11 deaths reported from "cold" (Table 66) should perhaps be added, it being uncertain whether disease or weather is intended in certain cases. The number of deaths reported as resulting from *falls* of various characters was 49; 35 of these were entirely unspecified as to character, except that the neck was said to be broken in two instances; 3 deaths, all elderly males, resulted from falls on the ice; 3 from falling from building; 2 from falling down stairs; 2 from tree; 1 each from beam, scaffold, load of hay, jumping from window. Twenty-four deaths, all males, were caused by *falling trees*. *Fractures*, the manner of the accidents causing them unspecified, caused 34 deaths, as follows: Skull, 9; hip, 7; leg, 7; neck, 3; back, 2; foot, 1; shock from fracture of femur, 1; compound, 1; entirely unspecified 3. *Freezing* caused 6 deaths definitely reported as such. To this number should be added, undoubtedly, certain of the deaths reported from "exposure" and "cold." Accidents from *machinery* in mills, foundries, etc., caused 14 deaths according to the returns: saw-mill, 6; mill, 3; caught on shaft, 2; bursting of lathe, machinery, in foundry, each 1. From injuries received in what may be classed as *outdoor employments*, 21 deaths were reported: injured by hay-fork, 1; by binder, 1; by logs, 3; threshing machine, 1; in well, 3; stump machine, 1; gin pole, 1; in woods, 3; falling earth, 2; caving-in of gravel pit, buried in ditch, leg crushed in hay-press, covered in sewer, "crushed by big wheel while loading saw-log," each 1. There were 16 deaths reported from *scalding*, 1 of which, a girl under 5 years, was from scalding with hot lard. *Surgical operations* were reported as causing 37 deaths during the year. In many of these cases the disease or injury that rendered the operation necessary should have been given as the true cause of death, and not the operation undertaken, perhaps as a last resort, for the relief of conditions that would have necessarily resulted fatally without interference. In detail there were reported 3 deaths from shock, and 1 from heart failure after operation; 6 deaths from amputations; 3 from operations for hernia; 1 removing tumor from neck; 1 operation for hip joint disease, 3 for tumor; 1 each after operations for ovarian disease, gravel, tumor of bowels, "kidney trouble;" unspecified, 15. Of the 202 *miscellaneous* and entirely *unspecified* deaths from accident, the following were noted: reported simply as "accidental," "killed," "injured," and otherwise

indefinitely, 158; injured when a child, 1; on board ship, 1; killed by vessel, 1; falling window sash, 1; in bar room, 1; blood poison caused by bruise, 1; over work, 2; elevator, 1; concussion of spine, 1; injury of chest, 1; kicked on head, 1; nervous shock, 2; "plow fell on him (child)," 1; overlifting, 1; tooth extracted, 1; brain concussion, 8; wounds received during war, 3; wound of back, 1; overeating, 1; killed in boiler, 1; shock, 1; at fire, 1; starvation, 1; "no doctor—improper care," 1; wounds, 2; "lock-jaw caused by rusty nail," 1; "swallowed a rubber article," 1; "bled to death," 1; "unnatural causes," 1; struck by tank, 1; struck by stone, 1; crushed under house, 1.

II.—SUICIDAL DEATHS, 1893.

There were 109 suicidal deaths in Michigan during the year 1893 according to the registration returns. In some cases compiled as accidental deaths the motives of decedents may have been suicidal, but it is obviously impossible to treat such cases other than as they appear on the face of the returns. The number of deaths from suicide in 1893 is not exceeded by the number reported for any previous year of registration.

Although suicides, like all other deaths, are imperfectly registered in Michigan, comparison of the figures returned for successive periods of years, in which the same percentage of deficiency may be presumed to obtain, shows that the death-rate from this cause is increasing. It was 3.3 per 100,000 population for the five-year period, 1871-75; 4.0, 4.6 and 4.9 for the following periods in order. Of course these rates are much below the truth, but the fact of increase seems to be clearly indicated.

In comparing the deaths from suicide by occupations and by nativity, the conclusion must not be hastily reached that the number of deaths recorded for any class shows the tendency to suicide of that class; the number of persons of the given occupation or nativity in the State must be taken into consideration. Thus nearly one-third of the suicidal deaths in the twenty years, 1874-93, were those of farmers, there being 470 out of a total of 1,602, or 29 per cent so reported. But, according to the tables of occupations of the State census of 1884, the latest data available on this subject and which may be taken as a fair average of the twenty-year period, the proportion of farmers to all other occupations was about 28 per cent. Thus the suicide death-rate of farmers appears to be but slightly, if at all, above the average suicide death-rate for all the inhabitants of the State.

III.—HOMICIDES, 1893.

The more general term homicide is employed instead of the word murder, usually found in the returns, because it is evident that in our loose and inaccurate records, where even the manner of death is not generally specified, any point that requires discrimination, as the legal status of a homicide, cannot be depended upon. Many deaths fail to be registered in Michigan from each cause, and it is probable that the number returned as homicides would be increased if all that occurred were properly recorded.

Included under this head in Table 62 appears the remarkable return "compulsory suicide." This return was received from Shiawassee county, and relates to the death of one William Sullivan, who was lynched at Corunna on May 23, 1893, for the murder of Layton Leech on January 1, 1893. Whether Sullivan, as claimed, and as the present return evidently represents, committed suicide just before he was seized by the mob by cutting his throat with a broken bottle, or whether he was still alive when subjected to mob violence, the case evidently belongs to this class. It may be noted that the death of his victim does not appear—no return was received of the murder.

Table 64.—Months of death, sex and civil condition of persons reported as suicides in Michigan for each of the twenty years, 1874-93, inclusive.

Years.	Total.	Months of death.												Sex.		Condition.				
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.	Males.	Females.	Married.	Single.	Widow.	Unk.
Total, 1874-93.	1,602	92	73	105	148	151	145	151	152	129	139	156	154	7	1,226	375	978	415	143	66
1874.	53	7	3	4	1	4	5	5	4	3	5	6	6	—	31	22	28	17	4	4
1875.	52	3	4	3	4	8	4	4	4	5	3	6	4	—	42	10	84	10	3	5
1876.	54	3	1	3	7	7	8	2	4	5	6	5	3	—	43	11	35	12	3	4
1877.	66	2	5	7	4	7	5	6	7	4	2	7	10	—	46	20	38	23	2	3
1878.	a 63	5	2	5	5	5	9	5	7	5	6	5	4	—	40	23	41	16	4	2
1879.	59	3	2	4	7	3	8	5	7	5	4	4	7	—	46	13	35	19	3	2
1880.	65	4	3	6	8	9	6	3	4	7	2	6	6	1	50	15	38	20	4	3
1881.	57	1	5	3	3	4	4	7	9	7	4	6	4	—	42	15	34	11	9	3
1882.	62	2	3	4	6	8	7	2	7	5	7	4	6	1	44	18	32	24	3	3
1883.	91	5	1	7	9	5	8	11	9	4	6	16	10	—	69	22	53	23	12	3
1884.	104	4	5	7	8	6	16	8	8	14	10	10	8	—	84	20	71	28	4	1
1885.	b 91	4	4	3	7	7	9	9	11	4	14	10	8	1	78	12	55	19	13	4
1886.	82	7	2	4	6	13	5	4	11	9	7	5	9	—	64	18	46	20	11	5
1887.	105	3	4	10	12	11	5	10	12	10	13	6	9	—	75	30	68	28	10	4
1888.	101	6	4	3	10	13	11	9	7	9	11	8	8	2	82	19	54	31	12	4
1889.	94	7	3	3	7	7	8	7	11	4	8	11	17	1	78	16	59	19	14	2
1890.	108	7	8	7	11	11	7	17	7	7	8	9	9	—	90	18	70	25	7	6
1891.	79	8	1	7	9	4	6	8	3	5	10	9	8	1	49	30	55	16	6	2
1892.	107	3	5	8	15	9	9	17	6	8	6	9	12	—	82	25	71	26	7	3
1893.	109	8	8	7	9	10	5	12	14	9	7	14	6	—	91	18	66	28	12	3

a 1 mulatto.

b 1 sex unknown.

Table 65 (A).—*Occupations of persons reported as suicides in 1893, with aggregate for twenty years, 1874-93, inclusive. (The numbers for the year 1893 are in parentheses.)*

Occupations.	No.	Occupations.	No.	Occupations.	No.
Agents.....	11	Farm-workers.....	1	Painters.....	10
Apprentice (1).....	1	Firemen.....	1	Peddlers (1).....	6
Architects.....	1	Fruit packer (1).....	1	Physicians.....	8
Bakers.....	2	Furniture packers.....	1	Photographers.....	1
Bankers.....	3	Gardeners (1).....	3	Policemen (1).....	2
Barbers.....	5	Grain dealers.....	1	Printers.....	4
Beer peddler.....	1	Harness makers.....	3	Prostitutes.....	9
Blacksmith (1).....	9	Hatters.....	1	Real estate dealers.....	1
Book agents.....	1	Hostlers.....	1	Sailors.....	5
Bookkeepers.....	14	Hotel keepers (1).....	9	Salesmen.....	6
Brewers.....	5	Housekeepers (5).....	125	Saloonkeepers (2).....	25
Brickmakers.....	3	Housewives (6).....	43	School girls.....	1
Brick masons.....	1	Housework.....	5	Seamstresses.....	1
Brushmaker (2).....	2	Insurance agents.....	4	Section bosses (2).....	2
Business men.....	4	Janitor (1).....	1	Servants.....	31
Butchers.....	9	Jeweler (1).....	1	Ship carpenters.....	1
Cabinet makers.....	3	Laborers (21).....	224	Shoemakers (8).....	18
Carriage trimmers.....	1	Lawyers.....	6	Soldiers.....	4
Carpenters (4).....	37	Longshoreman (1).....	1	Stavemakers.....	1
Cigar makers (1).....	7	Lumbermen.....	5	Stovemounters.....	1
Clerks (2).....	37	Machinists.....	5	Street sprinkler (1).....	1
Commercial travelers (2).....	2	Mail clerk.....	1	Students (1).....	6
Conductors.....	1	Manicure.....	1	Tailors.....	8
Contractors.....	2	Masons (3).....	13	Tanners.....	3
Cooks.....	1	Mechanics.....	14	Teachers.....	5
Coopers.....	7	Merchants (3).....	27	Teamsters.....	7
Cutters.....	1	Millers.....	3	Tinners (1).....	3
Dentists.....	1	Milliners.....	2	Tobacco dealers.....	1
Domestics (1).....	10	Miners (1).....	6	Trunk makers.....	1
Draymen.....	5	Ministers.....	1	Unemployed (4).....	58
Druggists.....	5	Mill owners.....	1	Unspecified (7).....	166
Engineers.....	5	Miscellaneous.....	11	Upholsterers.....	1
Farmers (26).....	470	Moulder (1).....	1	Waiters.....	1
Farmers' wives.....	7	Musicians.....	4	Weavers.....	3
Total number for 1893, 109; for twenty years, 1874-93.....					1,802

Table 65 (B).—Nativity of persons who were reported as suicides in the year 1893, and total for the twenty years, 1874–93, inclusive. (The numbers for the year 1893 are in parentheses.)

Nativity.	No.	Nativity.	No.	Nativity.	No.
Austria	8	Ireland (4)	46	Poland (1).....	4
Bohemia.....	1	Italy.....	1	Prussia.....	11
Canada (8).....	100	Kentucky.....	1	Rhode Island.....	1
Colorado.....	1	Maine	8	Russia.....	2
Connecticut	6	Massachusetts.....	8	Scotland	17
Delaware.....	1	Michigan (37).....	391	Sweden (2).....	17
Denmark (1).....	4	Minnesota.....	1	Switzerland.....	3
England (7).....	79	New Hampshire.....	4	Texas.....	1
Europe.....	2	New Jersey (1).....	9	United States.....	2
Finland (2).....	2	New York (17).....	272	Unknown (8).....	120
France	6	North Carolina.....	1	Vermont	16
Germany (15).....	287	Norway (1).....	2	Virginia.....	2
Holland (1).....	22	Nova Scotia.....	2	Wisconsin	11
Illinois	6	Ohio (8).....	81	Zealand	2
Indiana (4).....	16	Pennsylvania (2).....	35		
Total number for 1893, 109; for twenty years 1874–93.....					1,602

Table 65 (C).—Means of death employed by suicides in 1893, and in the twenty years, 1874–93, inclusive. (The numbers for the year 1893 are in parentheses.)

Means used.	No.	Means used.	No.	Means used.	No.
Burning	1	Jumping from window	1	Starving.....	1
Cutting throat (2).....	29	Poison (14).....	220	Strangulation.....	2
Drowning (9).....	87	Run over by cars	2	Unspecified (50).....	888
Dynamite	1	Severing artery.....	3	Wounds (1).....	9
Hanging (16)	212	Shooting (17).....	146		
Total number for 1893, 109; for twenty years, 1874–93.....					1,602

CAUSES OF DEATH, ALPHABETICAL LIST.

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* Numbers under these titles included in total for "Accidents and violence." † Not distinguished as to sex, but chiefly males; included, by sex, in "All other casualties."

Table 66.—CONTINUED.—Causes of death—Alphabetical list.

Sex.	Months, 1893.												Years, 1888-93.							Causes of death.	Ages in periods of years, 1893.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Unknown.	1893.	1892.	1891.	1890.	1889.	1888.		Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and over.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Males.....	1			1										1						1888.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</

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* Congestion of brain is included in disease of brain for years previous to 1891. For explanation of irregularity in deaths from disease of brain and inflammation of brain as compiled for the year 1890, see note at end of this table.

	88	75	102	89	100	108	80	83	106	113	94	118	1	1155	1111	1079	1147	1150	1321	Consumption	54	14	40	145	191	153	118	85	81	52	46	39	29	35	37	14	13	9
Females																																						
Unknown																1																						
Total	31	30	49	52	89	28	48	47	50	49	43	52	2	520	548	547	349	453	516	Convulsions	464	12	4	6	6	4	3	3	1	2	3	1	2	3	1	2	2	7
Males	16	12	32	31	25	13	24	24	24	24	24	34		283	321	313	204	256	295	"	254	6	3	3	3	1	1	2									2	
Females	15	18	16	21	14	15	24	23	26	25	19	18	2	296	225	234	145	196	221	"	209	6	1	3	3	3	2	1	1	1	3	1	1	1	1	1	1	
Unknown			1											1	2				1	"	1																	
Males										1				1	1	2				Cough	1																	
Females			1											1		2				"																		
Total	22	23	21	15	14	9	6	10	19	17	25	35	1	217	211	253	415	357	384	Croup	189	23	1	2													1	
Males	11	13	10	10	6	4	5	6	8	11	13	14		111	127	133	244	173	214	"	99	11		1													1	
Females	11	10	11	5	8	5	1	4	11	6	12	21	1	106	83	120	171	184	170	"	90	12	1	1													1	
Unknown																1				"																		
Total	2	7	1	4	1	2		2	3	6	8		42	80	35	56	46	90		Croup, Membranous	25	11	2	1	1												2	
Males	2	3			1	1		1	2	3	6		22	42	18	38	19	46		"	14	6		1													1	
Females	4	1	4		1			1	1	3	3	2	20	38	17	18	27	44		"	11	5	2	1													1	
Males									1				1				1	2		Cyanosis	1																	
Females	1													1	1	2	3	1		"																		
Total	9	16	20	9	13	11	10	24	17	12	13	29		183	223	315	280	334	318	Debility	88		1	2	1		2	3	2	2	4	2	5	11	12	23	20	5
Males	2	10	11	8	7	2	5	12	11	4	8	17		97	130	178	154	181	169	"	49			2	1		1	1	1	1	2		2	7	7	10	14	
Females	7	6	9	1	6	8	5	12	6	8	5	12		86	92	137	126	153	149	"	39		1				1	3	1	1	2	3	4	5	13	6	5	
Unknown																1				"																		
Total	3	3	2	1	5	1	1	5	4	5	8	1		39	45	20	26	33	34	Debility, Nervous	1		1		1	1		1	5	3	8	1	4	6	5	2		
Males	1	1		2				4		1	2			11	17	10	8	14	17	"																		
Females	2	2	2	1	3	1	1	1	4	4	6	1		28	28	10	18	19	17	"	1		1		1	1		1	4	3	5	1	3	1	5	1		
Total	4	7	15	13	9	6	2	11	10	15	13		111	69	78	63	74	71		Diabetes	1	5	9	7	5	4	1	4	3	7	10	13	10	4	12	11	3	2
Males	3	5	8	8	5	4	5	2	7	5	8	7		67	38	56	42	54	51	"			2	4	6	8	4	1	3	1	5	6	6	5	2	8	3	1
Females	1	2	7	5	4	2	1		4	5	7	6		44	31	22	21	20	20	"	1	3	5	1	2				2	2	2	4	7	5	2	4	3	1

Total	3	4	7	5	4	9	11	6	5	9	6	9	79	95	70	70	61	86	Dropey of heart	2	1	2	3	1	4	4	4	5	14	10	13	7	
Males	2	1	8	2	2	7	5	4	3	2	1	5	37	52	40	38	23	37	"	1	1	1	1	2	2	1	2	1	3	7	5	7	4
Females	1	3	4	3	2	2	6	2	8	7	5	4	42	43	30	32	38	49	"	1	1	1	1	2	2	3	2	4	2	7	5	6	3
Males															1	1		1	Dropey of kidneys														
Males									1			1	2					2	Dropey of liver											1		1	
Females		1											1	1		1			"	"	"												
Males															1				Dropey of scrotum														
Males															1				Dropey of stomach														
Females	1												1						"	"	"											1	
Females										1			1						Dropey of throat					1									
Total	1	1	1	3	2	8	12	34	12	1	2	77	78	89	115	154	150	40	Dysentery	40	1	1			1	2	3	2	5	4	6	8	
Males		1	1	2	1	4	5	14	7	1	2	38	33	51	70	85	85	23	"						1	1	2	3	1	3	4		
Females	1			1	1	4	7	20	5			39	39	38	45	69	85	17	"	17	1	1			2	2	2	8	1	3	4		
Unknown													1						"														
Total								2				2	2	1	13	4	3		Dysentery, Chronic				1										
Males								2				2	1		9	2	3		"				1		1								
Females															4	2			"														
Total	2	1		2		3	2	1	2	3		16	14	14	28	22	24	2	Dyspepsia	2			1		1	1	1	2	4	2	1	1	
Males	2	1		2		2	2		2		3	12	7	12	14	11	16	1	"	1			1		1	1	2	2	2	1			
Females						1		1	2			4	7	2	14	11	8	1	"	1								2			1		
Males								1				1					1		Ear, Disease of														
Females														2					"	"												1	
Males	2	1	1	1		1						6	5	3				2	Eczema	2										1	2		
Females	1	1	1					1	1			5	4	1				3	"										1			1	
Males																	1	2	Embolism														
Females																		1	"														
Males	1									1			2						Empyema	1												1	

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* Included in rheumatism in Tables 53, 54 and 55.

Total	1	1	2	3	3	2	4	1	3	2	1	23	18	38	29	31	21	Jandice	5	1	1	1	2	3	1	2	4	8									
Males	1	1	2	2	1	2	1	2	1	1	1	12	8	19	19	17	9	"	1	1	1	1	1	1	2	1	2	3									
Females				1	2	2	2	2	1	1	1	11	10	19	10	14	12	"	4				1	1	1	1	2										
Males												1						Jandice, Infantile	1																		
Males												1						Joint, Disease of	1																		
Females												1						"	1																		
Males	1	1	1				1	1				3	1	2	1	2	1	Kidneys, Abscess of	1			1															
Females													1					"																			
Total	16	14	40	27	33	34	34	32	34	30	32	1	351	319	257	219	229	210	Kidneys, Bright's dis. of	3	4	4	9	11	11	23	19	11	34	25	31	30	34	47	29	20	6
Males	14	12	28	19	22	23	21	22	17	23	17	24	242	235	207	163	163	159	"	2	2	2	4	6	12	10	8	24	16	24	25	36	37	25	17	2	
Females	2	2	12	8	11	11	13	10	7	11	13	8	1	109	84	50	57	66	51	"	1	2	2	5	11	11	9	3	10	9	7	5	8	10	4	3	4
Males					1							1						Kidneys, Congestion of																	1		
Males													1					Kidneys, Consumption of																			
Total	7	4	6	7	8	9	3	6	12	8	15	91	96	120	96	99	103	Kidneys, Disease of	5	1	1	1	2	1	5	2	3	1	2	4	7	12	12	15	17		
Males	7	2	6	4	6	4	9	3	5	11	7	13	77	72	89	78	84	"	4																		
Females	2	2	1	4					1	1	1	2	14	24	31	18	21	19	"	1	1	1	1	1	1	1	1	1	1								
Males								1					1	1				Kidneys, Hemorrhage of																			
Total	2	5	3				4	2	1	3	3	23	13	14	8	13	31	Kidneys, Inflammation of	3	1	2	1	2	1	1	1	1	1	1	2	2	1	3	1			
Males	1	3	2				2	2	1	1	2	14	6	10	6	10	24	"	2	1	1	1	1	1	1	1	1	1	1	2	1	2	1	2	1		
Females	1	2	1				2					9	7	4	2	3	7	"	1																		
Males	1											1						Knee joint, White swell'g of																			
Males													2	3	1	2		Laryngitis	2																		
Females	2											1	3	3	2	1	1	"	1																1		
Males																		Laryngitis, Tubercular																			
Females																		"																			
Males																		Leucocythemia																			

* For explanation of decrease in number of deaths compiled under this title for the years 1890-98, see p. 181.

Males.....	4	2	1	1	1	1	10	5	1	3	5	8	Liver, Inflammation of.....	4	1	1	1	3	1
Females.....	1	1	1	1	1	1	4	2	3	3	1	5	" " " "	1	2	1	1	1	1
Males.....	1	1	1	1	1	1	1	1	1	1	1	1	Loss of mother.....	1	1	1	1	1	1
Males.....	1	1	1	1	1	1	1	1	1	1	1	1	Limbago.....	1	1	1	1	1	1
Females.....	1	1	1	1	1	1	1	1	1	1	1	1	" " " "	1	1	1	1	1	1
Total.....	1	1	2	1	2	2	7	9	7	9	6	9	Lungs, Abscess of.....	1	1	2	1	1	1
Males.....	1	2	1	1	1	1	5	6	5	3	3	4	" " " "	1	1	2	1	1	1
Females.....	1	1	1	1	1	1	2	3	2	6	3	5	" " " "	1	1	1	1	1	1
Males.....	1	1	1	1	1	1	1	1	1	1	1	1	Lungs, Collapse of.....	1	1	1	1	1	1
Females.....	1	1	1	1	1	1	1	1	1	1	1	1	" " " "	1	1	1	1	1	1
Total.....	8	9	13	6	8	1	3	1	6	5	16	77	Lungs, Congestion of *.....	38	2	1	3	2	2
Males.....	2	3	7	4	7	1	2	5	3	7	42	46	" " " "	24	1	1	1	1	4
Females.....	1	6	6	2	1	5	1	1	1	2	9	35	" " " "	14	2	2	2	1	1
Total.....	3	11	6	8	5	7	2	11	4	2	3	9	Lungs, Disease of *.....	30	1	2	7	2	1
Males.....	2	8	3	2	3	4	2	8	2	1	2	5	" " " "	18	1	5	1	1	1
Females.....	1	3	3	6	2	3	3	2	1	1	4	29	" " " "	12	1	1	2	1	1
Unknown.....	1	1	1	1	1	1	1	1	1	1	2	2	" " " "	2	1	1	1	1	1
Males.....	1	1	1	1	1	1	1	1	1	1	1	1	Lungs, Gangrene of.....	1	1	1	1	1	1
Total.....	1	2	4	4	2	1	4	3	4	5	2	34	Lungs, Hemorrhage of.....	3	1	4	2	4	3
Males.....	1	3	3	3	3	3	2	3	4	2	21	24	" " " "	2	1	2	1	3	1
Females.....	1	1	2	1	2	1	1	1	1	1	1	13	" " " "	1	1	2	1	1	2
Males.....	1	1	1	1	1	1	1	1	1	1	1	3	Lungs, Edema of.....	1	1	1	2	1	1
Females.....	1	1	1	1	1	1	1	1	1	1	1	1	" " " "	1	1	1	1	1	1
Total.....	1	1	1	1	1	1	1	1	1	1	1	7	Malformation.....	7	1	1	1	1	1
Males.....	1	1	1	1	1	1	1	1	1	1	1	6	" " " "	6	1	1	1	1	1
Females.....	1	1	1	1	1	1	1	1	1	1	1	8	" " " "	1	1	1	1	1	1

* Congestion of lungs is included in disease of lungs for years prior to 1891. For explanation of irregularity in deaths from pneumonia and disease of lungs as compiled for the year 1890, see note at end of this table.

	3	6	4	6	1	2	7	8	5	1	5	49	32	38	37	26	37	Meningitis, Spinal	27	5	2	8	1	1	1
Males	4	1	5	8	3	2	3	7	3	4	6	49	31	46	37	86	26	"	82	7	3	2	2	1	1
Females																		"							
Total			1	1	1	1	1	1	1	1	3	7	2	4	4	4	7	Meningitis, Tubercular	4	2			1		
Males		1	1									3		2	3	2	3	"	3						
Females											3							"							
Males											3	4	2	2	1	2	4	"	1	2					
Females																		Milk, Diseased							
Total												10	9		6	7		Month, Disease of							
Males													5	3		3	2	"							
Females														5	6		5	"							
Total	1	1	1	1	1	1	1	1	1	1	1	5	4	7	1	3		Mumps	5						
Males	1	1	1	1	1	1	1	1	1	1	1	4	3	6		3		"	4						
Females												1	1	1	1	1		"	1						
Males														1				Muscles, Disease of							
Females														1				Navel, Inflammation of							
Total														1	5	1		Navel, Hemorrhage of							
Males															1			"							
Females																		"							
Males			1					1			2							Necrosis	1				1		
Females				1							1							"							
Total															3	2		Nerves, Disease of							
Males																		"							
Females											1	1	1			2		"					1		
Total	2	3	1	1	2	1	1	2	3	3	19	8	10	7	16	14		Nerves, Multiple sclerosis of							
Males	1	1						1	1	2	6	4	5	2	8	8		Neuralgia	1	1		2	2	1	2
Females	1	2	1	1	2	1	2	2	1		13	4	5	5	8	6		"	1	1		2	2	1	1
Total																		Neuritis							1
Males																		Esophagus, Stricture of							
Females																		"							

Males		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	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Total	1	5	1	1	1	9	1	11	3	5	11	Stomach, Neuralgia of	1	1	2	4	1
Males		1	1	1	1	2	1	6	1	4	3	"				1	1
Females	1	5		1		7		5	2	1	8	"	1	1	2	3	
Males								1		1	3	Stomach, Paralysis of					
Females		1				1				1	1	"	1				
Males	1	1				1	2	2		1		Stomach, Rupture of		1			
Females								1				"					
Males						1						Stomach, Stricture of	1				
Females						1						"		1		1	
Total	1	1	2	2	2	11	19	17	26	17	21	Stomach, Ulceration of	2	1	1	1	1
Males	1	1	1	1	1	4	8	8	19	9	14	"	1	1	1		1
Females	1	1	2	1	2	7	11	9	7	8	7	"	2	1		1	1
Males	1					1	3	1	4			Stricture			1	2	
Females							3		2			"					1
Total	8	7	9	10	5	12	14	9	7	14	6	Suicide	1	3	7	12	7
Males	8	6	7	7	4	10	11	7	6	11	6	"	1	3	5	10	7
Females	1	2	3	1	2	3	2	1	3			"		2	2	3	4
Males			2			2	1		1		1	Suprarenal-capsule, Dis. of				1	1
Females			1			1						"					
Males		1	1			2						Syncope	1		1		
Females								1	1		2	"					
Total	4	3	1	1	2	2	1	4	2	21	11	Syphilis	9	3	1	1	2
Males	2	1	1	1	2	3	1	3	5	8	8	"	5	2		1	1
Females	2	2	1			1	1	1	1	1		"	4	1	1		1
Males								3	2	2	6	Tape worm					
Females										2		"					

CAUSES OF DEATH, ALPHABETICAL LIST.

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[illegible]

* For explanation of increase in number of deaths compiled from "unknown" cause for the years 1890-93, see p. 131. The deaths from unspecified diseases include deaths stated to be due to some disease, and thus not entirely unknown as to character, *e. g.*, "natural causes."

CLIMATIC CONDITIONS AFFECTING CAUSES OF DEATH.

It is impossible to give a satisfactory account of this subject at the present time as certain very important data, namely, the absolute numbers of deaths that occurred in each month of the registration year from each cause, are not known. The numbers given in Table 53 are known to be defective, and to be more deficient for the early months of the year than for the latter months. While, theoretically, a correction might be applied to individual causes of death as returned by months in order to bring them more nearly in accord with the probable numbers of deaths that actually occurred, in practice it is not easy to ascertain the exact amount of correction, nor to satisfactorily distribute it among the months. Adulterated statistics do not pass current in the statistical world. When a grave deficiency exists, as in Michigan, at the foundation of our registration methods, it is better to exert every effort to remove the defect and to establish a satisfactory system of collection of data, rather than to waste time in basing deductions upon figures known to be in great measure incorrect.

For this reason the comparisons made in previous registration reports of the deaths returned by months from certain causes with meteorological data for the same months are not given. In their stead a somewhat fuller series of tables of meteorological data than usual is taken from the last report of the Secretary of the State Board of Health (for 1892), to which, by the kindness of Dr. Baker, the corresponding data for 1893 (not yet printed) have been added. These reports have long been indebted for excellent meteorological data to the systematized collections of the State Board of Health observers, and it is hoped that the time may soon come, with the passage of a satisfactory registration law, when mortality and meteorological conditions may be directly compared without risk of the serious errors to which such comparison is now liable.

SANITARY METEOROLOGY.

A new and important feature of the work of the United States Weather Bureau is the collection of vital statistics from all portions of the Union, to the end that a thorough study may be made, and reliable information be given health seekers, of sections where the climatic conditions may favor the prolongation of life to persons affected by various diseases.

It is hoped that all physicians interested in the subject of medical climatology will become coöperating voluntary reporters.

In a circular issued by Prof. Mark W. Harrington, Chief of the Weather Bureau, under date of January 2, 1895, the proposed work is set forth as follows:

The interest manifested by every class of people in the subject of climate and its influence on health and disease has determined the Honorable the Secretary of Agriculture, through the medium of the Weather Bureau, to undertake the systematic investigation of the subject.

It is hoped to make the proposed investigation of interest and value to all, but especially to the medical and sanitary professions, and to the large number of persons who seek, by visitation of health resorts and change of climate, either to restore health or prolong lives incurably affected, or to ward off threatened disease.

The study of the climates of the country in connection with the indigenous diseases should be of material service to every community, in showing to what degree local climatic peculiarities may favor or combat the development of the different diseases, and by suggesting, in many instances, supplementary sanitary precautions; also by indicating to what parts of the country invalids and health seekers may be sent to find climatic surroundings best adapted to the alleviation or cure of their particular cases.

The hearty coöperation of the various boards of health, public sanitary authorities, sanitary associations and societies, and of physicians who may feel an interest in the work, is asked to achieve and perfect the aims of this investigation.

No compensation can be offered for this coöperation other than to send, free of cost, the publications of the bureau bearing upon climatology and its relation to health and disease to all those who assist in the work.

Coöperation will consist in sending to this office reports of vital statistics from the various localities. That these reports may be of value, it is evident to all that they should be accurate and complete, and be rendered promptly and regularly. Blank forms of reports have been prepared so as to occasion as little trouble and labor as possible on the part of the reporter, and will be furnished by the bureau on application.

At the very beginning of the investigation it is not possible to outline precisely the channels through which the results obtained will be made public, but it is hoped to publish soon a periodical devoted to climatology and its relations to health and disease. The publication will probably resemble in size and general appearance the present Monthly Weather Review, the subject matter being, of course, different.

More detailed information will be furnished on application.

It is to be regretted that, after over twenty-five years of registration of deaths in Michigan, there are no accurate data relating to the seasonal distribution of mortality in this State of value for the above important purposes. Not until a system of immediate registration of deaths is put into operation in this State will the desired information be obtained. In the meantime the proposed plan of the Chief of the Weather Bureau promises to obtain interesting and valuable results from those cities of the United States (some few of which are in Michigan) that possess reliable systems of registration and from the registration states, and will undoubtedly awaken much interest in the subject of vital statistics.

Table 67.—Average temperature by year and months in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Average temperature,—degrees Fahrenheit.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91...	46.19	21.55	23.69	29.44	44.44	55.96	65.74	70.54	67.86	61.18	49.42	36.36	28.12
1891 (11 stations)	47.61	26.90	27.33	28.93	47.11	55.40	67.62	66.67	68.16	65.50	49.01	34.57	34.11
1892 (12 stations)	45.83	18.72	26.26	28.44	42.50	53.73	66.79	70.87	68.91	61.08	48.87	33.61	24.16
1893 (9 stations)	45.64	15.23	20.09	30.61	43.19	54.30	69.05	72.16	68.57	60.40	50.59	36.61	26.88

Table 68.—Average daily range of temperature by year and months in 1893, compared with annual and monthly averages for 1892, 1891, and for the 13 years, 1879-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Average daily range of temperature,—degrees Fahrenheit.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 13 years, 1879-91 ..	18.08	15.85	17.51	17.50	19.42	20.59	20.44	20.81	20.10	20.09	17.11	14.31	13.34
1891 (16 stations)	18.01	12.90	15.76	14.90	19.57	23.16	21.02	21.33	19.93	21.70	18.18	13.65	14.04
1892 (19 stations)	17.15	16.62	14.06	17.16	19.12	17.22	18.52	22.02	19.93	20.14	18.14	11.60	11.27
1893 (15 stations)	17.92	15.05	18.20	16.64	16.32	19.20	20.52	20.75	22.12	20.36	17.27	14.28	14.31

Table 69.—Comparison of the extremes and the range of temperature during the year and during each month of the year 1893, with the average of the extremes, and of the range, for the fifteen years, 1877-91; also, statement of the extremes and of the range for each of the seven years, 1886-92. Observations made with registering thermometers by observers for the State Board of Health and for the U. S. Signal Service. These comparisons, etc., are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Year and months.	Extremes and range of temperature,—degrees Fahrenheit.*																										
	1886.			1887.			1888.			1889.			1890.			1891.			Av. for 15 years, 1877-91.			1892.			1893.		
	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.	Highest.	Lowest.	Range.
Year	101	-30	131	104	-28	132	99	-33	132	97	-23	120	100	-26	126	100	-14	114	99	-26	125	102	-24	126	97	-26	123
January	55	-22	77	54	-28	82	45	-23	68	53	-7	60	66	-14	80	52	-10	62	54	-20	74	57	-22	79	49	-26	75
February	54	-30	84	55	-21	76	49	-33	82	49	-23	72	63	-8	71	55	-14	69	56	-20	76	52	-24	76	44	-23	67
March	73	-25	98	60	-14	74	69	-20	89	65	5	60	59	-26	85	58	-8	66	65	-14	79	64	-18	77	66	-6	72
April	84	0	84	82	8	74	88	6	82	80	14	66	80	1	79	87	10	77	83	8	75	79	13	66	80	9	71
May	88	22	66	97	28	69	94	21	63	95	23	72	91	21	70	85	25	60	89	22	67	85	27	63	88	27	61
June	95	27	68	98	40	58	99	29	70	93	36	57	98	32	66	97	31	66	94	32	62	102	34	68	96	36	60
July	101	33	68	104	39	65	97	40	57	97	36	61	98	39	59	95	37	58	98	40	58	97	41	56	96	43	53
August	98	32	66	98	37	61	94	33	61	94	37	57	100	34	66	100	37	63	97	37	60	95	37	58	97	38	59
September	91	27	64	91	26	65	90	28	62	93	25	68	90	27	63	98	35	58	94	29	65	92	30	62	89	22	67
October	83	16	67	80	11	69	73	28	50	76	14	62	80	24	56	87	21	66	84	19	65	82	23	59	84	22	62
November	72	-15	87	70	-6	76	72	8	64	66	11	55	68	0	68	65	-3	68	70	1	69	64	5	59	68	6	62
December	53	-22	75	56	-6	62	55	1	54	65	2	63	50	-6	56	60	8	52	57	-8	65	58	-11	69	62	-14	76
Av. month.....	79	4	75	79	10	69	76	9	67	77	14	63	79	10	68	78	14	64	78	10	68	77	12	66	77	11	68

* For the 17 years, 1877-93, the highest temperature was 105°, at Battle Creek, September 9, 1884; the lowest was -36°, at Manistique, January 27, 1885.

Table 70.—Average absolute humidity, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Absolute humidity,—grains of vapor in a cubic foot of air.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91 ..	3.43	1.45	1.55	1.79	2.78	3.90	5.42	6.03	5.73	4.88	3.53	2.33	1.81
1891 (8 stations)	3.54	1.77	1.84	1.79	3.19	3.67	5.86	5.80	5.83	5.42	3.37	2.82	2.14
1892 (10 stations)	3.49	1.35	1.80	1.79	2.81	3.97	6.08	6.23	5.92	4.88	3.34	2.23	1.64
1893 (7 stations)	3.51	1.19	1.42	2.08	2.77	3.83	6.12	6.50	5.58	4.78	3.72	2.37	1.88

Table 71.—Average relative humidity, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 14 years, 1878-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Relative humidity,—per cent of saturation.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 14 years, 1878-91..	76	83	82	78	70	69	73	72	73	75	76	79	83
1891 (8 stations).....	77	87	84	83	74	66	73	70	73	75	75	84	80
1892 (10 stations).....	80	88	90	83	71	77	80	72	74	77	75	88	89
1893 (7 stations).....	79	89	88	84	73	72	74	72	70	75	79	82	88

Table 72.—Average per cent of cloudiness, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Per cent of cloudiness.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91..	56	71	64	58	51	49	48	41	43	45	58	68	74
1891 (11 stations).....	55	79	70	67	50	40	48	38	47	33	52	80	57
1892 (11 stations).....	57	61	77	48	48	66	60	33	38	38	48	85	79
1893 (8 stations).....	54	76	65	56	68	50	34	38	30	43	47	65	80

Table 73.—Inches of rain and melted snow, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Inches of rain and melted snow.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91..	34.74	2.25	2.61	2.31	2.49	3.37	3.85	3.18	3.27	3.16	3.29	3.17	2.64
1891 (17 stations).....	31.66	1.91	3.13	2.74	2.03	1.33	2.53	2.55	4.41	1.92	1.71	4.56	2.54
1892 (18 stations).....	33.08	1.95	2.16	1.39	2.16	5.45	5.17	2.39	2.92	3.01	1.40	3.14	1.95
1893 (16 stations).....	36.34	2.34	2.78	2.40	4.77	2.91	3.55	2.83	1.22	2.52	4.24	3.05	3.74

Table 74.—Average amount of atmospheric ozone (day), by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Ozone by day,—degree of coloration of test-paper.*												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91..	3.34	3.52	3.61	3.66	3.51	3.55	3.35	2.95	3.16	3.10	3.09	3.13	3.40
1891 (8 stations).....	3.99	4.20	4.18	4.46	4.02	4.40	4.10	3.94	3.92	3.82	3.85	3.45	3.59
1892 (7 stations).....	3.95	4.29	4.32	4.18	3.58	4.24	4.39	3.60	4.52	3.56	3.69	3.23	3.83
1893 (5 stations).....	3.91	4.02	4.54	4.30	3.92	4.18	3.98	3.50	4.56	3.34	3.70	3.03	3.81

* In this exhibit allowance has been made for difference in sensitiveness of different lots of test-paper. Scale = 10 degrees.

Table 75.—Average amount of atmospheric ozone (night), by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 15 years, 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Ozone by night,—degree of coloration of test-paper.*												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91..	3.47	3.90	4.15	4.14	3.84	3.71	3.43	2.86	2.87	2.87	3.19	3.32	3.74
1891 (8 stations).....	4.22	4.03	4.86	4.91	4.83	4.41	4.37	4.15	3.92	3.61	3.92	3.51	4.19
1892 (7 stations).....	4.18	4.37	5.05	4.48	4.33	4.58	4.62	3.44	4.56	3.26	3.73	3.49	4.20
1893 (5 stations).....	4.20	4.03	4.92	4.92	4.62	4.55	4.15	3.66	4.56	3.24	3.91	3.28	4.53

* In this exhibit allowance has been made for difference in sensitiveness of different lots of test-paper. Scale = 10 degrees.

Table 76.—Average velocity of the wind in miles per hour, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 10 years, 1882-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Average velocity of the wind,— miles per hour.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 10 years, 1882-91..	9.6	10.9	10.8	10.4	10.1	9.4	7.8	7.9	7.7	8.6	9.5	10.7	11.2
1891 (8 stations).....	9.9	8.6	12.1	11.2	9.9	9.7	7.4	8.5	7.2	8.5	10.1	11.7	13.4
1892 (9 stations).....	9.2	10.8	8.8	9.2	11.8	9.7	7.5	6.9	7.3	8.4	9.4	10.4	9.8
1893 (8 stations).....	10.2	9.7	11.7	11.7	13.2	9.8	8.2	8.2	7.6	9.2	10.6	11.3	11.7

Table 77.—Average atmospheric pressure, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891 and for the 15 years 1877-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Average atmospheric pressure,—inches of mercury.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 15 years, 1877-91..	29.151	29.182	29.175	29.144	29.132	29.114	29.102	29.117	29.147	29.190	29.176	29.156	29.165
1891 (11 stations).....	29.057	29.041	28.993	29.063	29.025	29.118	29.015	29.055	29.035	29.158	29.105	29.048	29.027
1892 (12 stations).....	29.096	29.068	29.143	29.117	29.118	28.995	29.017	29.156	29.104	29.152	29.096	29.090	29.101
1893 (8 stations).....	29.060	28.977	29.124	29.067	29.000	28.982	29.066	29.077	29.111	29.086	29.079	29.059	29.093

Table 78.—Average daily range of atmospheric pressure, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891 and for the 10 years, 1882-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Average daily range of barometer,—inches of mercury.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 10 years, 1882-91...	.212	.318	.311	.260	.215	.161	.138	.123	.133	.165	.207	.255	.270
1891 (10 stations).....	.202	.241	.337	.259	.192	.130	.120	.132	.123	.148	.200	.266	.277
1892 (12 stations).....	.199	.236	.256	.236	.239	.213	.129	.135	.121	.142	.198	.241	.246
1893 (8 stations).....	.227	.253	.306	.290	.288	.175	.138	.151	.123	.167	.225	.213	.329

Table 79.—Range of atmospheric pressure, by year and months, in 1893, compared with annual and monthly averages for 1892, 1891, and for the 10 years, 1882-91. These averages are for groups of several stations in Michigan. (Data supplied by State Board of Health.)

Years, etc.	Range of barometer,—inches of mercury.												
	Annual av.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Av. 10 years, 1882-91.....	.980	1.330	1.331	1.183	1.075	.769	.744	.593	.645	.833	1.019	1.115	1.163
1891 (10 stations).....	.866	1.420	1.209	1.014	.677	.489	.634	.543	.581	.592	.802	1.263	1.171
1892 (12 stations).....	.961	1.084	1.236	1.164	1.009	1.064	.641	.783	.477	.798	.996	1.220	1.065
1893 (8 stations).....	.969	1.110	1.482	1.066	1.138	.955	.591	.487	.489	.616	1.256	1.135	1.313

PART V.—REGISTRATION OF VITAL STATISTICS IN THE CITIES OF MICHIGAN.

This part of the report is a continuation of the subject introduced in the report for the preceding year, and which, in interest and practical importance, is second to no other portion of the report, viz., the knowledge of the vital history of our Michigan cities. It is very often the case that important decisions regarding the efficiency of city boards of health, or comparisons between the work accomplished by successive public health administrations, hinge upon the intelligent interpretation of vital statistics. Mortality statistics, like every other species of figures, may be made the vehicles of misrepresentation in regard to actual sanitary changes and results. It is important, therefore, that there be at hand an impartial and purely statistical report on the vital statistics of each city, to which reference may be made for the exact facts in the event of their becoming the subjects of public interest.

Besides its practical importance in settling disputed questions of public health, the subject of urban statistics is of great interest, as the vital changes of the people are seen at their most intense movement in the cities. The age distribution of the population tends to vary from that of the country, owing to the large migration of young people from country to town, and this change is proceeding with great rapidity in the United States as a whole and in this State. The spread of certain classes of diseases is facilitated by the density of city populations, and other diseases result from the malnutrition and unhygienic conditions usually associated with city life. Moreover, at present the vital statistics of the State can best be studied through the vital statistics obtained for certain of its cities by their local registration systems. It has been fully pointed out that the results of the State enumeration of births and deaths are very imperfect, owing to imperfections in the manner of collecting the data, and in many respects the conclusions derived from a study of the results of local registration are more nearly correct than those obtained from the State Registration Reports.

In the last report the status of the registration of vital statistics, by which is included almost solely the registration of deaths, in the cities of Michigan was presented as fully as the material that could be obtained permitted, and reference may accordingly be made to the pages of that report for any details in regard to the methods of collection of data and the legal authority for the same. In the present report, as in the preceding one, the statistics of births and deaths are given as returned from the cities of the State under the general registration law. The data thus collected have no

connection with the deaths registered under local ordinances, and, in general, are very imperfectly collected and returned. For the purpose of comparison, the results of local registration are given for the cities of Detroit, Grand Rapids and Kalamazoo, these being all the cities of the State, from which reliable data could be obtained.

A statement of the contents of the tables in this part of the report is here given:

Synopsis of tables relating to the registration of vital statistics in the cities of Michigan.

Table.	Vital statistics of Michigan cities, 1893-94.
80.	List of the cities of Michigan, in alphabetical order, showing the population of each city in 1890 and 1894, together with the number of births and deaths returned from each under the State registration (enumeration) for 1893, and the birth-rates and death-rates for that year.
81.	Comparison of the city and country birth-rates and death-rates in Michigan, according to the returns, for the years 1890-93.
82.	Deaths and death-rates for certain cities of Michigan under local systems of registration, 1890-94.
83.	Deaths registered from important diseases and groups of diseases in Detroit, by months, for each of the years 1893-94, inclusive.
84.	Deaths registered from important diseases and groups of diseases in Grand Rapids, by months, for each of the years 1893-94, inclusive.
85.	Comparison of the death-rates from certain important diseases as enumerated by supervisors for the State of Michigan for the years 1890-93, and as registered by the city boards of health for the cities of Detroit and Grand Rapids for the years 1890-94.
86.	Results of registration of births in Detroit by the city board of health, 1894.
87.	Births registered in Grand Rapids, by the city board of health, by months, for the years 1892-94.

BIRTHS AND DEATHS IN THE CITIES OF MICHIGAN AS RETURNED UNDER THE STATE SYSTEM OF REGISTRATION, 1893.

Table 80 presents the results of the State system of enumeration of births and deaths for each city of the State during the year 1893. For comparison, the populations of each city are also given according to the United States census of 1890 and the State census of 1894, and the birth-rates and death-rates of each city are calculated upon an estimated population for 1893, based upon the average annual increase of population of each city between these censuses.

The average birth-rates and death-rates of city populations are considerably higher than those of the country according to the returns; comparisons are given in Table 81, which shows the rates for the State as a whole, for Detroit, for the cities of the State exclusive of Detroit, and for the country exclusive of all cities, for each of the years 1890-93.

Table 80.—*Births and deaths returned by the State enumeration from the cities of Michigan for the year 1893, with rates per 1,000 estimated population. (Still-births included.)*

Cities.	Population, 1894.	Population, 1890.	Births enumer- ated, 1893.	Deaths enumer- ated, 1893.	Birth-rate per 1,000 popula- tion, 1893.	Death-rate per 1,000 popula- tion, 1893.
All cities	821,082	711,268	21,154	9,951	26.4	12.5
Adrian	9,511	8,758	155	129	16.6	13.8
Albion	4,844	3,763	75	63	16.4	13.8
Alpena	12,139	11,283	340	180	28.5	15.1
Ann Arbor	11,069	9,431	79	70	7.4	6.6
An Sable	2,661	4,328	47	20	15.3	6.5
Battle Creek	15,522	13,197	173	79	11.6	5.3
Bay City	30,039	27,839	775	403	26.3	13.7
Belding*	3,006		28	26		
Bessemer	2,528	2,566	133	32	52.4	12.6
Big Rapids	5,202	5,303	75	61	14.3	11.7
Benton Harbor*	5,314		93	31	23.3	7.8
Cadillac	5,105	4,461	83	21	16.8	4.2
Charlotte	4,350	3,867	20	11	4.7	2.6
Cheboygan	6,956	6,235	135	49	19.9	7.2
Clare*	1,392		21	9		
Coldwater	5,285	5,247	70	60	13.3	11.4
Corunna	1,551	1,382	11	23	7.3	15.2
Detroit	237,837	205,876	7,545	3,318	32.8	14.4
Dowagiac	3,532	2,806	34	7	10.1	2.1
Eaton Rapids	2,157	1,970	16	19	7.6	9.0
Escanaba	8,124	6,808	216	90	27.7	11.5
Flint	10,420	9,809	151	113	14.7	11.0
Gladstone	2,130	1,337	57	13	29.5	6.7
Gladwin*	882		11	5		
Grand Haven	5,267	5,023	131	71	25.2	13.6
Grand Ledge	2,218	† 1,606	30	23	14.5	11.1
Grand Rapids	79,424	60,278	1,877	940	25.1	12.6
Greenville	3,113	3,056	15	27	4.8	8.7
Harrison*	746		10	9		
Hastings	3,014	2,972	52	34	17.3	11.3
Hillsdale	4,121	3,915	26	40	6.4	9.8
Holland	6,307	3,945	197	53	34.5	9.3
Hudson*	2,346		38	39		

* Rates are based upon population for 1893 estimated from censuses of 1890 and 1894; cities incorporated between these years have no population stated for 1890 in this table and no estimates of population or vital rates are given in these cases.

† Population of village of Grand Ledge, 1890; incorporated as city in 1893.

Table 80.—CONCLUDED.—*Births and deaths in cities, 1893.*

Cities.	Population, 1894.	Population, 1890.	Births enumer- ated, 1893.	Deaths enumer- ated, 1893.	Birth-rate per 1,000 popula- tion, 1893.	Death-rate per 1,000 popula- tion, 1893.
Ionia	5,021	4,482	72	46	14.7	9.4
Iron Mountain	7,638	8,599	336	109	42.6	13.3
Ironwood	9,324	7,745	453	207	50.7	23.2
Ishpeming	11,687	11,197	472	129	40.8	11.2
Jackson	22,614	20,798	849	278	15.7	12.5
Kalamazoo	21,053	17,853	495	268	21.5	13.2
Lansing	15,847	13,102	232	114	15.3	7.5
Lapeer	2,952	2,753	29	25	10.0	8.6
Ludington	8,244	7,517	233	78	28.9	9.7
Manistee	13,449	12,312	420	115	31.6	8.7
Marine City	3,485	3,268	72	53	21.0	15.4
Marquette	9,724	9,093	420	165	43.9	17.2
Marshall	4,599	3,965	61	57	13.8	12.8
Mason	1,761	1,875	28	33	15.6	18.4
Menominee	12,532	10,630	538	134	44.6	11.1
Midland	2,484	2,277	44	20	18.1	8.2
Monroe	5,613	5,258	72	43	13.0	7.8
Mt. Clemens	5,647	4,748	100	46	18.4	8.5
Mt. Pleasant	3,178	2,701	70	22	23.9	7.2
Muskegon	20,222	22,702	580	353	27.8	16.9
Negaunee	5,940	6,075	277	65	46.4	10.9
Niles	4,508	4,197	57	81	12.9	18.3
North Muskegon*	911	-----	26	9	-----	-----
Norway*	3,587	-----	205	89	-----	-----
Owosso	8,272	6,564	89	65	11.3	8.3
Pontiac	7,276	6,200	82	132	11.7	18.8
Port Huron	18,140	† 16,375	420	194	23.7	11.0
Saginaw	44,642	46,322	1,397	618	31.0	13.7
Sault Ste. Marie	7,244	5,760	146	62	21.2	9.0
St. Clair	2,575	2,353	105	35	41.7	13.9
St. Ignace	2,068	2,704	44	16	19.8	7.2
St. Joseph*	4,519	-----	80	18	-----	-----
St. Louis*	2,204	-----	16	4	-----	-----
Stanton	1,303	1,352	28	10	21.3	7.6
West Bay City	12,337	12,981	362	146	29.0	11.7
Wyandotte	4,209	3,817	67	0	16.3	0
Ypsilanti	6,111	6,129	18	44	2.9	7.2

* Rates are based upon population for 1893 estimated from censuses of 1890 and 1894; cities incorporated between these years have no population stated for 1890 in this table and no estimates of population or vital rates are given in these cases.

† Includes population of Fort Gratiot, 2,332, consolidated with Port Huron in 1893.

Table 81.—*Comparison of the city and country birth-rates and death-rates in Michigan, as returned, 1890-93. (Still-births included.)*

City and country.	Births per 1,000 population.				Deaths per 1,000 population.			
	1893.	1892.	1891.	1890.	1893.	1892.	1891.	1890.
State	21.8	21.3	23.8	25.0	10.0	10.0	10.4	10.3
Detroit*	32.8	35.2	57.5	78.8	14.4	14.2	19.1	23.8
Cities exclusive of Detroit.....	24.1	24.3	21.4	23.3	11.8	12.7	11.9	11.1
Country.....	18.8	18.0	19.6	17.6	8.5	8.3	8.4	8.1

* The birth-rates and death-rates for Detroit for the years 1890 and 1891 are entirely unreliable owing to fraudulent returns. See last report for explanation. It is to be noted that the fraudulent additions to the returns of deaths are not sufficient to increase the rates sufficiently to equal the actual registered death-rates for those years, as given in Table 82.

Both the birth-rates and death-rates of the urban population are seen to be higher than those of the rural population of the State, but it is probable that the difference is slightly exaggerated in the above comparison owing to the fact that registration is somewhat more accurate on the whole in the cities. In some cities it is evident that the results of immediate local registration have been used in making the returns, and in such cases many deaths are included that would have been overlooked if the periodical enumeration had been depended upon alone. *The fact that one city shows a higher degree of mortality than another in Table 80 must not be taken as conclusive evidence that more unsanitary conditions exist until the relative accuracy of the enumeration of deaths is determined.* These statistics ought, it is true, to be a reliable guide in ascertaining the comparative healthfulness of different portions of the State and of its various cities, but the percentage of omissions is so large and so irregularly distributed under the present imperfect law that very few definite statements of value can be made in regard thereto.

LOCAL MUNICIPAL REGISTRATION OF DEATHS IN MICHIGAN, 1893-94.

While compulsory registration of deaths is the rule in many of the cities of the State under local ordinances, as fully shown in the last report, the laws for this purpose are so loosely administered in practice as to yield few results of value. Moreover, in most cases there is no provision for compilation or even for making a general statement of the results of each year, in consequence of which it is difficult to obtain information concerning the current year and quite impossible to learn anything concerning the number of deaths registered and the causes of death in previous years. The principal facts obtainable are those contained in the monthly reports of the Detroit and Grand Rapids boards of health and the manuscript report of the health officer of Kalamazoo to the State Board of Health and to the State Department.

The total number of deaths registered in the cities of Detroit and Grand Rapids for each of the years 1890-94 and in Kalamazoo for 1890 and 1893-94 may be seen in Table 82. The death-rates, calculated to estimated population for intercensal years, are also given. It should be remembered that the deaths stated include still-births, in order

that comparison may be directly made with the results of the State system under which they have always been compiled with deaths, and that consequently the death-rates given may be slightly greater than those stated by the city authorities for the same years in their reports.

Table 82.—Deaths and death-rates registered in certain cities of Michigan, 1890-94.
(Still-births included.)

Cities.	Deaths registered.					Death-rates per 1,000.				
	1894.	1893.	1892.	1891.	1890.	1894.	1893.	1892.	1891.	1890.
Detroit.....	4,388	4,976	5,417	4,681	4,308	18.4	21.6	24.4	21.9	20.9
Grand Rapids.....	1,162	1,293	1,352	1,255	1,091	14.6	17.4	19.4	20.2	18.1
Kalamazoo.....	265	290	-----	-----	314	12.6	14.3	-----	-----	17.6

The facts in regard to the distribution of deaths from each important cause and group of causes through the months of the years 1893 and 1894 in Detroit and Grand Rapids are presented in Tables 83 and 84. Not only are a larger number of deaths registered by the local authorities, from whose reports the data are condensed, than are collected by the State enumeration, but no corrections are necessary for varying degrees of accuracy in registration in different months, and direct comparisons are accordingly permissible with meteorological data. It will also be noted that the returns for these cities are brought down to the end of the year 1894, or nearly to the date of publication of the report, thus making the statistics more timely than have ever been given in these reports, which are necessarily, under the State registration law of 1867, at least two years behind the period recorded. There is no reason why the vital statistics of the entire State should not be as accurately and promptly registered as are the deaths in these cities.

The occurrence of 36 deaths from small-pox in Detroit in the year 1894 will be noted with interest. Beginning with June, the numbers reported for each month were as follows: June, 6; July, 2; August, 3; September, 2; October, 6; November, 8; December, 9. From reports for the first months of 1895 the history of the epidemic may be continued: January, 20; February, 5; March, 1; April, 4.

* Numbers for 1895 based on weekly reports to the State Board of Health. In some cases, in which a week is nearly equally divided between two months, the numbers assigned to adjacent months may require slight changes.

The prevalence of different diseases in these cities during 1893 and 1894 can be best compared in Table 85, which gives the death-rates per 100,000 population from each cause for each of the years 1890-94, inclusive, and also shows the corresponding mortality of the State as a whole for the years 1890-93. The latter figures indicate very clearly the large percentage of loss that attends the registration of deaths under the old system of State enumeration. Thus the death-rate from consumption for the State in 1893 was 97.7 per 100,000 population,—a death-rate so low, if accurate, as compared with that of the United States as a whole (163.2 per 100,000 by the census of 1890) that our State would seem to rival Colorado and California as a health resort for the subjects of tuberculosis.* Of course this is utter nonsense, as at once appears when we examine the statistics of Detroit and Grand Rapids obtained by the immediate registry of deaths as they occur. The death-rates in Detroit from consumption range during the five years studied from 161.3 in 1890 to 180.1 in 1893; in Grand Rapids, from 162.1 in 1893 to 199.1 in 1890. These rates, although from 60 to 100 per cent higher than the rates given for the State by the annual enumeration, are low as compared with those of many eastern cities and states. During the six years ending May 31, 1890, the average mortality from consumption in Baltimore was 317.35 deaths per 100,000 population, and in Washington it was much higher, being 390.45 per 100,000.† The average death-rate of Massachusetts from this disease was, for the decade 1881-90, 292 per 100,000.‡ It is probable that the mortality from consumption is somewhat greater in the cities of the State, especially the larger ones, than in the State as a whole, but the greater part of the difference between the two series of rates for this disease, as well as for others, depends upon the imperfect enumeration of deaths by the supervisors under the present law.

LOCAL MUNICIPAL REGISTRATION OF BIRTHS IN MICHIGAN.

The results under this head are practically confined to the cities of Detroit and Grand Rapids, the registration of births beginning in the former in August, 1893, and in the latter in 1891. There were registered in Detroit for the four months September, October, November and December, 1893, a total of 1,883 births, of which number 90 were still-born. The results for the calendar year 1894 are shown in detail in Table 86, which was furnished to the State Board of Health by Mr. Homer L. Love, formerly clerk of vital statistics of the Detroit board of health, and kindly contributed by the State Board of Health to this report. Table 87 contains the results of the registration of births in Grand Rapids, by months, for each of the years 1892 to 1894.

* According to the mortality statistics contained in the Compendium of the Eleventh Census, Part II, p. 21, there were 2,899 deaths in California, 490 in Colorado and 2,747 in Michigan from consumption during the census year 1889-90. The death-rates per 100,000 population are respectively 239.96, 118.87 and 131.19. The latter rate for Michigan is higher than that obtained by the State registration from the facts (1) that no time is wasted before the enumeration begins in the case of the census; (2) the city systems of immediate registration are utilized by the United States census as far as possible; (3) greater care is, perhaps, exercised by the census enumerators than by the supervisors.

† Eleventh Census: Report on Vital Statistics of the District of Columbia and Baltimore, p. 31.

‡ Forty-ninth Registration Report of Massachusetts, 1890, p. 342.

Table 83.—Deaths from important diseases and groups of diseases registered by the city board of health of Detroit for the years 1893-94, by months.

Cause of death.	Months, 1893.												Months, 1894.											
	Year 1893.												Year, 1894.											
	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
TOTAL DEATHS:																								
<i>Still-births included</i>	4,976	398	388	427	378	409	843	1,569	1,546	351	381	445	4,368	388	306	369	398	946	456	429	832	363	317	335
<i>Still-births excluded</i>	4,455	350	339	381	348	365	296	554	495	320	298	401	3,834	345	280	333	313	808	434	400	946	322	277	263
SPECIFIED DISEASES	4,248	337	330	370	334	347	280	530	448	308	312	386	3,752	331	273	323	253	264	408	376	328	303	275	283
<i>Dangerous communicable diseases</i>	1,123	95	98	115	97	107	89	103	100	92	75	79	977	100	69	81	60	72	71	78	72	77	91	100
Consumption *.....	414	31	31	43	41	48	35	35	35	31	21	36	403	40	35	42	35	45	23	38	30	29	32	27
Other tubercular diseases.....	194	13	17	20	15	8	19	17	24	26	17	9	158	20	9	14	6	12	18	15	17	13	13	15
Croup.....	41	5	5	4	1	4	1	1	2	5	6	4	32	5	2	4	2	4	2	1	2	2	3	2
Diphtheria.....	191	80	14	19	14	16	8	17	18	4	12	16	209	21	11	8	8	7	11	7	11	14	27	40
Erysipelas.....	11	1	1	1	1	2	1	3	1	1	1	2	15	4	2	1	1	1	1	1	1	1	3	1
Fever, Puerperal.....	13	1	1	2	1	1	3	1	2	1	1	1	10	1	2	1	2	1	3	1	1	1	1	1
Fever, Scarlet.....	78	12	19	8	7	9	6	8	3	2	2	2	11	1	6	2	1	1	1	1	1	1	1	1
Fever, Typhoid.....	99	3	4	10	10	6	2	8	10	16	15	10	67	7	3	6	4	4	3	6	6	8	6	6
Measles.....	34	4	4	4	2	7	9	4	2	1	1	2	10	1	1	1	1	1	4	3	1	1	1	1
Small-pox.....													36					6	2	3	2	6	8	9
Chicken-pox.....																								
Whooping-cough.....	48	2	5	5	6	5	11	6	5	1	2	2	26	2	1	5	3	6	2	3	3	1	1	1
<i>Bladder diseases</i>	16			1	2		2	3	2	1	4	1	13	1	1	1	1	1	1	1	1	1	1	3
<i>Bowel diseases</i>	670	16	16	23	30	19	23	223	155	80	47	19	589	22	23	24	78	13	29	166	124	97	46	13
Bowels, Inflammation of.....	116	4	5	9	5	10	5	19	13	23	14	5	131	10	10	15	8	3	12	18	14	17	10	8
Diarrhoea.....	89			3		1	1	1	23	10			22	1	1	1	1	1	10	5	3	2	2	2
Cholera infantum.....	269	1	1	1	1	1	9	167	112	46	28	2	326			1	1	4	9	130	89	67	23	2

DEATHS FROM IMPORTANT DISEASES IN DETROIT.

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[illegible]

* Includes deaths returned as "tuberculosis."

* Includes deaths returned as "tuberculous."
† Data for July and August, 1933, supplied by Mr. Charles S. Hathaway, secretary of the Detroit board of health, expressly for this Report, no printed reports having been issued for those months. There is a slight discrepancy between the total number of deaths given in the table for each month (339 and 346) and the numbers accompanying the detailed statement by causes (306 and 324).

Table 84.—Deaths from important diseases and groups of diseases registered by the city board of health of Grand Rapids for the years 1893-94, by months.

Causes of death.	Months, 1893.												Months, 1894.												
	Year 1893.												Year 1894.												
	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
TOTAL DEATHS:																									
Still-births included.....	1,298	107	100	95	115	112	90	94	134	110	102	105	134	1,162	91	87	93	94	100	81	87	118	108	107	97
Still-births excluded.....	1,196	97	92	86	106	103	84	86	129	93	97	99	124	1,035	75	65	76	85	86	67	82	107	112	100	91
SPECIFIED DISEASES.....	1,127	92	88	82	102	97	75	79	121	88	90	92	121	981	70	63	75	80	78	58	80	104	104	95	88
Dangerous communicable diseases.....	310	24	22	27	31	21	19	30	26	30	25	26	29	234	19	18	18	18	19	17	19	17	20	19	26
Consumption.....	121	12	9	9	11	5	6	11	11	13	11	6	17	134	6	13	12	13	15	11	13	11	8	4	12
Other tubercular diseases.....	37	---	---	1	4	1	5	1	6	7	3	5	4	24	---	2	3	1	---	1	4	4	3	---	5
Croup.....	8	1	---	1	4	---	---	---	---	1	---	---	1	1	1	---	---	---	---	---	---	---	---	---	---
Diphtheria.....	41	6	6	1	---	3	6	7	2	2	4	8	1	17	2	1	---	---	---	1	1	1	2	3	6
Erysipelas.....	3	---	1	2	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	1
Fever, Puerperal.....	5	---	2	3	---	---	---	---	---	---	---	---	---	3	---	---	---	---	---	---	---	2	1	---	---
Fever, Scarlet.....	10	1	1	1	4	---	1	1	1	1	1	1	1	8	---	---	---	---	4	3	---	---	1	---	---
Fever, Typhoid.....	70	3	5	12	6	6	1	4	4	7	5	12	5	41	10	2	3	1	1	2	1	1	6	9	5
Measles.....	5	---	1	1	1	---	3	---	---	---	---	---	---	2	---	---	2	---	---	---	---	---	---	---	---
Small-pox.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chicken-pox.....	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Whooping-cough.....	10	1	---	1	1	1	3	2	---	1	---	---	---	3	---	---	1	---	1	---	---	---	2	---	---
Bladder diseases.....	9	1	1	---	1	5	---	---	---	---	---	---	---	3	---	---	1	---	1	---	---	---	1	---	---
Bowel diseases.....	134	9	8	7	2	7	6	8	38	27	10	6	6	135	5	7	5	3	6	3	21	42	23	10	9
Bowels, Inflammation of.....	27	3	1	1	3	---	---	---	7	6	3	1	2	34	3	1	2	1	5	1	7	10	2	1	1
Diarrhea.....	14	1	1	1	1	2	---	---	8	2	1	3	---	8	---	---	---	---	---	---	3	4	1	---	---
Cholera infantum.....	43	---	---	---	---	---	1	4	23	12	3	---	---	48	---	---	---	---	---	10	22	11	4	---	---

VITAL STATISTICS OF MICHIGAN, 1893.

Table 85.—Comparison of the death-rates per 100,000 population from certain important diseases as enumerated by supervisors for the State of Michigan, and as immediately registered by city boards of health for Detroit and Grand Rapids, 1880-93.

Causes of death.	As enumerated by supervisors for the State of Michigan.				As registered by city boards of health.					
					Detroit.			Grand Rapids.		
	1893.	1892.	1891.	1890.	1894.	1893.	1892.	1891.	1890.	1890.
Consumption	97.7	95.9	96.7	105.4	169.4	180.1	171.7	161.3	168.7	168.1
Diphtheria and croup	55.3	60.5	63.3	83.0	101.3	100.9	204.6	169.3	22.7	194.1
Scarlet fever	16.3	20.4	18.8	10.6	4.6	33.9	92.9	32.7	18.9	11.6
Typhoid fever*	31.3	30.2	33.2	24.0	28.2	43.1	37.4	29.5	13.6	59.7
Measles	5.8	8.3	10.6	10.9	4.2	14.8	2.7	14.5	2.5	5.0
Whooping-cough	7.8	6.8	7.4	3.6	10.9	20.9	7.2	7.5	3.4	3.3
Bowel diseases	92.1	75.2	86.2	88.1	247.6	291.5	311.9	303.9	235.1	240.6
Brain diseases	77.5	70.8	75.7	73.7	157.3	157.1	165.0	140.3	150.1	147.6
Cancer and tumor	36.3	32.2	32.4	31.3	45.4	53.5	51.8	46.8	52.5	48.1
Childbirth	10.1	11.3	12.0	9.3	7.6	9.1	14.4	12.6	7.8	3.3
Convulsions	23.6	25.3	25.7	16.7	87.0	112.2	140.2	139.8	121.9	36.5
Heart diseases†	64.8	61.3	63.2	56.6	66.0	83.1	87.9	101.0	84.0	109.5
Influenza	25.2	41.8	50.5	51.8	8.4	10.4	25.2	11.7	6.8	16.6
Kidney diseases	21.7	20.4	19.1	15.8	47.1	44.4	44.2	40.2	35.0	28.2
Lung diseases‡	84.6	81.4	79.9	85.3	213.2	313.3	281.4	266.1	275.4	199.3
Pneumonia §	66.3	63.9	63.2	58.5	162.7	225.4	183.5	173.0	190.4	134.4

* Including a few deaths from "typhus" and "typho-malarial" fever.

† Including "heart failure" in rates for Michigan; this term does not appear in the city reports.

‡ Including pneumonia, but not including consumption.

§ Including "congestion of lungs."

Table 86.—*Results of registration of births in Detroit by the city board of health for the year 1894.*

Months.	Total.	White.		Colored.		Twins.		Illegiti- mates.		Attended by physicians.		Attended by midwives.	
		Male.	Female.	Male.	Female.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.
Total	5,438	2,751	2,637	24	26	64	1	86	6	2,916	48	2,472	2
January	500	240	253	5	2	7	—	3	2	254	7	239	—
February	462	256	197	6	3	8	1	6	2	213	8	240	1
March	537	277	256	2	2	9	—	9	—	286	3	247	1
April	497	283	256	2	1	2	—	9	—	290	3	204	—
May	436	218	214	1	3	6	—	11	—	243	4	189	—
June	447	208	237	—	2	5	—	7	—	250	2	195	—
July	450	227	221	1	1	7	—	4	—	266	2	182	—
August	443	241	196	1	5	4	—	10	—	236	6	202	—
September	375	193	177	4	1	3	—	3	1	196	5	174	—
October	416	207	205	1	3	5	—	3	1	227	4	185	—
November	483	259	226	1	2	5	—	12	—	245	3	240	—
December	387	187	199	1	3	—	—	9	—	211	1	175	—

Table 87.—*Births registered in Grand Rapids by the city board of health during the years 1892-94, by months, with distinction of children born alive and still-born and premature children.*

Months.	Year, 1892.		Year, 1893.		Year, 1894.	
	Born alive.	Still-born.*	Born alive.	Still-born.*	Born alive.	Still-born.*
Total	1,462	164	1,593	102	1,398	127
January	123	14	154	10	119	16
February	134	13	127	8	128	2
March	128	19	150	9	130	17
April	139	13	118	9	117	9
May	119	10	132	9	108	14
June	126	16	129	6	100	14
July	134	10	136	8	109	5
August	131	10	144	5	124	11
September	129	19	153	17	109	6
October	102	18	105	5	120	9
November	99	8	129	6	115	16
December	98	14	116	10	119	8

* Including premature births.

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